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FOR

GARDENERS AND BOTANISTS.

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BOTANICAL
GARDEN.

EDITED BY

GEORGE NICHOLSON, A.L.S.,

Curator, Royal Botanic Gardens, Kew.

ASSISTED BY PROFESSOR J. W. H. TRAIL, A.M., M.D., F.L.S., IN THE PARTS RELATING TO INSECTS, FUNGI, PLANT STRUCTURE, HORTICULTURAL CHEMISTRY, &C.; AND J. GARRETT IN THE FRUIT, VEGETABLE, AND GENERAL GARDEN WORK PORTIONS.

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REFERENCE TO ILLUSTRATIONS OF PLANTS OTHER THAN THOSE FIGURED IN THIS WORK.

IT has been suggested, by an eminent Authority, that many readers would be glad to be informed where reliable Illustrations could be found of those Plants which are not figured in this Work. To meet this want, references to the figures in Standard Authorities have been given, the titles of the Works referred to being, for economy of space, abbreviated as follows:

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* Is still in course of publication.

Turnip—*continued.*

flesh white and firm; very early. EARLY SNOWBALL, one of the best whites, sweet and tender; early, largely grown for the London markets. EARLY STRAP-LEAVED WHITE STONE, fine quality; suitable for very early and for late sowing (see Fig. 130). EARLY WHITE DUTCH, an old and well-known sort, of excellent quality. EXTRA EARLY MILAN, bulb flattened, with purple top; very early, and compact in habit. ORANGE JELLY, or GOLDEN BALL, an excellent yellow variety (see Fig. 131); much favoured in the north of England and in Scotland. VEITCH'S RED GLOBE, of handsome shape and fine flavour;

FIG. 132. YELLOW MALTA TURNIP.

one of the best for main crop, and for use in winter. YELLOW MALTA, a handsome yellow variety, of good quality, but sometimes rather strong-flavoured (see Fig. 132).

TURNIP, DEVIL'S. A common name for **Bryonia dioica** (which *see*).

TURNIP FLEA, or **TURNIP FLY.** Names commonly given to two or three species of **Phyllotreta** (which *see*). This genus of small Beetles belongs to the large group formerly included under the generic name *Haltica*, but now, for convenience, subdivided, by minute characters, into numerous genera. All the insects in this group have the thighs of the hinder pair of legs thickened, whereby they are enabled to leap several inches. This power and their small size have gained for them the popular name of Fleas, though widely different from true Fleas in many respects. They all feed on plants, several being attached to the *Cruciferæ*. Turnips are often ravaged by *P. nemorum*; and *P. concinna* is also a dangerous foe to these plants in some localities. *P. consobrina* and *P. obscurella* are mentioned by Curtis, in "Farm Insects," as not uncommon on Turnips; and *P. flexuosa* and *P. Lepidii* have been recorded as dangerous in Germany. However, the general appearance and the habits of all are much alike; as are also the remedies that should be employed against their attacks. The general form of the species in the genus is well shown in Fig. 133; but the size varies from

Turnip Flea, or **Turnip Fly**—*continued.*

$\frac{1}{12}$in. to $\frac{1}{8}$in. in length. All have the ground-colour very dark olive-green or metallic-green. *P. nemorum* has a broad ochre-yellow streak down each wing-case (see

FIG. 133. TURNIP FLEA (*Phyllotreta nemorum*), magnified.

Fig. 133); and the legs are rusty-ochre, with pitchy thighs. *P. concinna* is more oval and convex than the former species, and is of a uniform greenish-black, with a shining coppery or brassy lustre—the legs being black, except the rusty-red base of the tibiæ. *P. consobrina*, *P. Lepidii*, and *P. obscurella*, are much like *P. concinna*, the four species differing in the pitting of the surface, in the peculiar shade of the metallic lustre, in the colour of the base of the antennæ, in the proportions of the fourth and fifth joints in these organs, and in size of body, to a slight degree. *P. flexuosa* is more like *P. nemorum*, being black, with a pale clay-yellow line down each wing-cover; but the pale line is narrow and wavy, and the knees are pitchy-black, not reddish; and the fourth and fifth joints of the antennæ are shorter than in *P. nemorum*.

An account of the life-history of the very common species *P. nemorum* may be regarded as fairly representative of the habits of all that attack Turnips; so that the following remarks, though referring primarily to that species, will also, in great measure, be applicable to the others. The Beetles usually pass the winter concealed under rubbish on the soil, *e.g.*, stubble or other dead herbage, clods, &c., though an occasional warm day brings them out of their shelters. In spring, they begin to feed on the cruciferous weeds (Shepherd's Purse, &c.), which are only too plentiful everywhere, alike in cultivated ground and in waste spots. When the cotyledons and first leaves of the seedling Turnips appear above the soil, they form the favourite food of the Beetles, which gnaw away the tissues till little more than the skeletons of the leaves remain, and the plants die in vast numbers. The crops are occasionally ruined; and even second and third sowings are sometimes destroyed in the same way. After the young plants have produced the rough leaves, the danger of serious injury from this cause is comparatively slight; though large holes are gnawed by the insects in the leaves. The female beetles each lay a few white eggs, here and there, on the lower surface of the leaves. In about ten days, the larvæ are hatched. They are pale yellowish maggots, with three pairs of legs in front, and a sucker at the end of the body. They gnaw through the skin of the leaf; and, for about a week burrow in the tissues below it. They then are full-fed, drop to the ground, and burrow from 1in. to 2in. into the soil, to become pupæ. In about a fortnight, the beetles emerge. There may thus be, and usually there are, several broods in a season.

Prevention and Remedies. It is most desirable to clear away all cover that can protect the insects. The ground should be cleared of all cruciferous weeds, such as supply the insects with food before the appearance of the Turnip crop. Digging and ploughing the soil in winter destroys many of the Beetles, by burying them too deeply to allow of their return to the surface.

It should be kept in mind that the dangerous period to the crop is while the seedlings are quite young, and that the danger is very much less when the plants have formed the rough leaves; consequently, whatever strengthens

Turnip Flea, or **Turnip Fly**—*continued.*

the plants, and shortens the duration of the dangerous period, is a valuable means of preventing harm. It is, therefore, of great importance to have the soil thoroughly prepared before the seed is sown, as well as to give a good supply of manures, such as phosphates and nitrogenous manures, and also to water the plants in dry weather. It has been suggested that thick sowing (up to 10lb. of seed per acre) will give a better prospect of escape from complete loss by the Turnip Flea; but this is not advisable, as overcrowding is apt to render the plants weak, and to prolong the period of danger from the Beetles, as well as to do harm in other ways.

A method sometimes employed to protect Swedish Turnips, is to mix the seed with one-third of its weight of the seed of common Turnips, the young plants of which are preferred by the insects.

Should the crops be attacked, the injury may be lessened, even though a cure should not be effected, by one or other of the following methods: A light, shallow tray may be tarred inside, and dragged over the rows of Turnips, having something at such a distance in front as to disturb the insects, so as to cause them to leap into the tray when roused. Many can thus be caught, the tar holding them fast; or a large hand-net, such as entomologists use in "sweeping" for insects, may be made use of, the plants being swept with it. Rolling the ground in the early morning has been found beneficial, as has been also the treading of a flock of sheep, kept in constant motion in the field, for an hour or two, in the early morning. The latter operations should be carried out only while the dew is still on the herbage; and the same rule should be observed in the application of dressings of all kinds, as these are found to be far more efficacious if put on while the plants are wet. Soot may be sprinkled along the drills of Turnips; but the dressing that has given the best results is said to be made up as follows: One bushel of fresh gas-lime, one of fresh lime, ten pounds of soot, and six pounds of flowers of sulphur, mixed and powdered thoroughly, and applied broadcast or along the rows while the dew is still on. The above amount is enough for two acres. Another mixture also strongly recommended is two bushels of road-scrapings, one of fresh lime, and fourteen pounds of sulphur per acre, applied as above.

TURNIP GALLS. The work of a small Weevil, which also forms somewhat similar Galls on Cabbages. A brief description of the Beetle (*Ceuthorhynchus sulcicollis*) will be found under **Cabbage Gall Weevil** (where, however, the name is spelt *Ceutorrhynchus*). To the particulars there given, a few words may be added. The colour of the insect is black, slightly shining, sprinkled with a few grey hairs, or small scales; the head and thorax are much punctured, and the latter has a deep median furrow, and a small prominence on each side; the wing-cases bear small prominences in front of the tips, and each thigh of the hindmost legs is toothed on the inner side. The length of body is $\frac{1}{12}$in. to $\frac{1}{8}$in. The females lay their eggs near the top of the roots of most Crucifers. In Turnips they do so a little above, or close to, the soil. In a short time, a Gall begins to appear, and at last its form and size may resemble a large half-pea fixed to the root by the flat side; or two or more may unite in growth. The Galls are fleshy, like the roots; and in each is a cavity, tenanted by a curved, whitish, footless maggot, which, when full-fed, bores its way out, drops to earth, and pupates 1in. or 2in. underground. This may be done in autumn, but the more backward larvæ winter in the Galls.

Remedies. The most certain is to cut off and destroy the Galls, with their occupants in them. Applications of soot or gas-lime, or other insecticides, to the soil whence infested plants have been lately removed, have

Turnip Galls—*continued.*

proved valuable in lessening the prevalence of the Beetles. Other measures against injury will be found mentioned under **Cabbage Gall Weevil.**

TURNIP, INDIAN. A common name for **Arisæma triphylla** (which *see*).

TURNIP, LION'S. The roots of *Leontice Leontopetalum.*

TURNIP MOTHS. The larvæ of several species of Moths feed on Turnip-plants, some preferring one organ, some another; but the insect which is usually denoted by the name of "Turnip Moth" is one of the *Noctuæ* (*see* **Moths** and **Noctua**). Its scientific name is *Agrotis segetum.* The popular name is rather misleading, as the larvæ feed on many other plants, including most root crops and numerous weeds. Moreover, several other Moths are almost as hurtful, in the larval state, to the roots of Turnips as is *A. segetum.* The genus *Agrotis* is a large one, and in the same species there may exist great variations in markings and shade of colour; while the species show a great general similarity to one another. The fore wings are long and rather narrow, and

FIG. 134. TURNIP MOTH (*Agrotis segetum*).

the hind wings are pale grey. *A. segetum* (see Fig. 134) reaches $1\frac{1}{4}$in. to $1\frac{3}{4}$in. across the fore wings, which are grey

FIG. 135. LARVÆ OF TURNIP MOTH.

Turnip Moths—*continued.*

or brownish, sometimes with a yellowish tinge; they are usually darker towards the front margin, and bear obscure, darker marks and cross-lines; the hind wings are pearly-grey. The larvæ are of the form shown in Fig. 135; they are smoky-brown, tinged with pink or purple, with darker lines and small spots, and a paler line down the middle of the back; the head is small, and much narrower than the body. Owing to their habit of living concealed below the surface of the soil, the larvæ are seldom seen. While young, they feed, in the darkness, above ground; and they are especially disposed to gnaw through the base of the stem in young plants, or to remove the bark, if the stems are too large to be gnawed through. They are indiscriminate feeders, devouring almost all kinds of herbaceous plants. In autumn, they often resort to Turnips, boring into the tuberous roots from below, and eating out large cavities, in which they live during the winter, or till food fails. A few become pupæ, in cocoons in the soil, in October; but by far the larger number pupate in spring; and the moths emerge in June.

The Heart-and-Dart Moth (*Agrotis exclamationis*) is very similar to, and almost as destructive as, the Turnip Moth. The larvæ of the two species are so much alike that it requires a skilled entomologist to distinguish the one from the other; but this is of little moment to gardeners and farmers, as they are as much alike in habits and in destructive powers as they are in appearance.

The larvæ of a good many more species of *Noctuæ* occasionally feed on the roots, leaves, or stems of Turnips, but they are so seldom the cause of perceptible injury to these plants that it is unnecessary to discuss them here.

Remedies. Such larvæ as feed on the leaves of Turnips are best combated by the means detailed under **Turnip Sawfly.** Those larvæ that frequent the roots are not easily reached when they have bored into the Turnips. The time when they can be destroyed, or kept in check, with most hope of success, is in autumn, while they are still living concealed during the day, but come out to feed at night. Hand-picking, by the light of a lantern, is too slow, except to protect choice plants. Soot and gas-lime have been found useful, applied round the top of the root of each plant; and the same is true of gas-water poured on the soil. Ploughing or digging the ground, during winter, is useful by turning up the larvæ and exposing them to rooks and to other insectivorous birds, which are, in truth, the agriculturist's best allies against foes of this sort.

TURNIP RADISH. *See* **Radish.**

TURNIP-ROOTED CELERY. *See* **Celeriac.**

TURNIP, ST. ANTHONY'S. A common name for **Ranunculus bulbosus** (which *see*).

TURNIP SAWFLY (*Athalia spinarum*). One of the most dangerous enemies to Turnips in many years, since the larvæ (known as "Niggers," or "Black Palmers," because of their dark colour) frequently appear in myriads in the fields, and devour the leaves of the young plants. Often a second sowing has been rendered necessary; and even a third or a fourth has been required at times. The perfect insects are Sawflies (*see* **Tenthredinidæ**), about ¼in. or ⅓in. long, and rather heavy in form. Their ground-colour is clay-yellow, covered with dense, whitish, short hairs. The antennæ, head (except white mouth), spots on thorax, and tips of shanks and of joints of the feet, are black. The wings are transparent, with nerves (except at base) dark. The female lays about 250 eggs, often from ten to twenty on a single leaf, along the margins. The eggs hatch in from six to twelve days. The larvæ at

Turnip Sawfly—*continued.*

first are white, with two black dots on the head; but when nearly full-fed they are black above, paler below, with slate-coloured and black spots on the sides. There are usually several folds of skin, but no hairs, on the body. Often many occur on each leaf, and the leaves are gnawed away to the ribs by them. In about three weeks they reach their full size, and then burrow underground, and form oval cocoons. In these the summer broods lie about three weeks, when they emerge as Sawflies. There are usually three broods of Sawflies each year—in May, July and August, and September. They are partial to flowers, but also sit underneath the leaves of Turnips in dull weather, and may be caught by sweeping the plants with a net. They have been observed to proceed from district to district, beginning at one side of a field, and crossing it to the other, in regular succession. When the larvæ are very numerous, the Turnips are almost wholly eaten down, and suffer so much that the crop is rendered nearly worthless.

Besides the well-known *A. spinarum*, another Sawfly does almost as much harm to Turnips in the larval stage. This is *A. ancilla* (also called *A. glabricollis*). The insects are much like *A. spinarum*; but their ground-colour is reddish or clay-yellow, and they are not hairy. The larvæ of the two species are very much alike, and it is probable that those of *A. ancilla* are often wrongly ascribed to *A. spinarum*. The remedies recommended below are beneficial against both species.

Remedies. Disturbing the larvæ when about to pupate, prevents this latter change, and the insect dies. It is also well to disturb them when changing their skins, as this is seriously hurtful to them, and destroys many. With this object, the plants may be brushed over with a rope, or with such branches as those of Firs, &c., and the larvæ thrown to the ground may be crushed; or quicklime or gas-lime may be sprinkled on the soil around the plants. Anything that will promote the rapid growth of the Turnip-plants is valuable, as diminishing the risk of injury; hence, watering or irrigating the plants with liquid manure, or even with pure water alone, is advisable, and has the further advantage of being directly injurious to the larvæ. Thick sowing is recommended, as part of the crop usually escapes, unless the larvæ are excessively numerous; but it brings with it serious drawbacks. Ducks have been employed with advantage to reduce the numbers of larvæ, and have, at times, saved the crops; but they are apt to suffer from eating the larvæ in quantities, becoming affected with diarrhœa, and getting very thin.

TURNIP-SEED WEEVIL (*Ceuthorhynchus assimilis*). A small Weevil, closely related to, and very much like, the gall-makers of the same genus (*C. sulcicollis*), known as **Cabbage Gall** or **Turnip Gall Weevils** (which *see*). It differs from the latter in the grey colour due to the pale hairs or scales scattered all over its dark body, and in the hinder thighs not being toothed on the inner side; and it is also slightly smaller. Its life-history is as follows: The Beetles usually emerge from the pupæ in autumn; they pass the winter in shelter, and may be found, in spring and early summer, on flowers of Cabbages, Turnips, and other cultivated or wild *Cruciferæ*, feeding upon the flowers. The females lay their eggs in the immature fruits; and the larvæ feed on the seeds, and, when full-fed, bore out of the seed-vessels, fall to the ground, and burrow into it, there to become pupæ.

Remedies must be confined to the capture of the Beetles, by nets or otherwise, on the flowers, since the habits of the larvæ, and the situation of the pupæ, almost preclude other means of capturing them freely.

TURNSOLE. *See* **Heliotropium.**

TURPENTINE-TREE. A common name for various species of *Abies*, *Pinus*, *Pistacia*, &c.

TURPENTINE VESSELS. "Tubes formed in the interstices of tissue, into which turpentine or such secretions are naturally drained during the growth of a plant. They are common in Conifers" (Lindley).

TURPINIA (named in honour of P. Turpin, French botanical artist and naturalist, who died in 1840). SYNS. *Dalrymplea*, *Eyrea*, *Lacepedea*, *Ochranthe*, *Triceraia*. ORD. *Sapindaceæ*. A genus embracing about eight species of stove or greenhouse, glabrous trees or shrubs, inhabiting India, the Indian Archipelago, China, the West Indies, and the northern provinces of South America. Flowers white, small, in spreading, axillary and terminal panicles; calyx five-cleft; petals five, orbicular, sessile, imbricated; stamens five. Fruit nearly globose, three-celled. Leaves opposite, exstipulate, imparipinnate or very rarely simple; leaflets opposite, serrulated, sometimes stipellate, coriaceous. Branchlets terete. The species known in gardens are here described. They thrive in a compost of peat, loam, and sand. Propagation may be effected by ripened cuttings, inserted in sand, under a glass, in heat.

T. arguta (sharp). *fl.* dirty-white, or purplish when in bud; inner sepals and petals oblong-ovate, about equal in length, the two outer sepals rather smaller; panicle dense, terminal. March. *l.* slightly crenate, 3in. to 6in. long, glabrous. *h.* 3ft. to 4ft. China, 1826. Greenhouse shrub. SYN. *Ochranthe arguta* (B. R. 1819).

T. insignis (remarkable). *fl.* sweet-scented; calyx segments unequal; petals very shortly unguiculate; panicle terminal. May. *l.* serrulated. *h.* 20ft. Mexico, 1847. A handsome, stove tree. SYN. *Lacepedea insignis*.

T. nepalensis (Nepaul). A synonym of *T. pomifera*.

T. occidentalis (Western). Cassava Wood. *fl.*, primary divisions of the panicle racemiform, opposite, bearing small corymbs, of which the upper ones are usually alternate. May. *fr.* dark blue. *l.*, leaflets two or three pairs, elliptic-oblong, crenate or serrate, glabrous, petiolulate, stipellate. *h.* 20ft. to 30ft. West Indies, 1824. Stove tree.

T. pomifera (apple-bearing). *fl.*, primary branches of the panicle opposite. May. *fr.* red, purplish, yellow, or green, ⅛in. to ¼in. in diameter. *l.* 5in. to 20in. long; leaflets three to nine, elliptic, oblong, or ovate, acuminate, 2½in. to 8in. long. *h.* 25ft. or less. India and China, 1820. Stove shrub or tree. (B. F. S. 159, under name of *T. nepalensis*.)

TURPINIA (of Persoon). A synonym of **Poiretia** (which *see*).

TURRÆA (named in honour of George Turra, 1607-1688, Professor of Botany at Padua, and author of several botanical works). ORD. *Meliaceæ*. A genus comprising about sixteen species of stove or greenhouse trees or shrubs, inhabiting tropical and South Africa, tropical Asia, and Australia. Flowers white, elongated; calyx four or five-toothed or parted; petals four or five, elongated, free, twisted; staminal tube cylindrical, four or five-toothed; anthers four or five, included or exserted; disk absent; peduncles axillary, few-flowered, many-bracted. Leaves alternate, petiolate, entire or obtusely lobed. The best-known species are here described. A compost of loam and peat is most suitable for their culture. Propagation may be effected by cuttings of ripened wood, with the leaves intact, inserted in sand, under a glass, in heat.

T. heterophylla (variable-leaved). *fl.* clustered at the ends of the branches; petals ten to fourteen lines long, shorter than the style; peduncles silky-tomentose, three to eight lines long. May. *l.* short-stalked, ovate, acute or obtusely pointed, 2in. to 3½in. long, undivided or sub-trilobed, the young ones pubescent beneath. Upper Guinea, 1843. Stove shrub. (B. R. xxx. 4, under name of *T. lobata*.)

T. obtusifolia (obtuse-leaved).* *fl.* on solitary, axillary peduncles six to ten lines long; petals glabrous, ligulate, 1in. to 1½in. long. May. *l.* obovate, 1in. to 1¾in. long, narrowed into short petioles, entire or obtusely three-

Turræa—*continued.*

lobed, with revolute margins, glabrous on both sides, paler beneath. Branches glabrous. *h.* 4ft. to 6ft. South Africa, 1872. Greenhouse shrub. (B. M. 6267.)

T. rigida (rigid). *fl.* in sessile fascicles from nodes of branches or old wood; corolla ¾in. to 1in. long, tubular, at first silky on the outside. April. *l.* alternate, short-stalked, entire, firm, obtuse or acute, 4in. to 6in. long, penninerved. Mauritius, 1816. A glabrous, stove bush or tree.

TURRITIS. Included under *Arabis*.

TURTLE HEAD, or **TURTLE BLOOM.** *See* **Chelone.**

TUSSACA. A synonym of **Goodyera** (which *see*).

TUSSACIA (named after F. R. de Tussac, a French botanist, who wrote a Flora of the Antilles in 1803). SYN. *Chrysothemis*. ORD. *Gesneraceæ*. A small genus (four or five species) of stove herbs, with creeping, simple or branched rhizomes, natives of the West Indies, Guiana, and Columbia. Calyx often scarlet, free, ample, campanulate, five-angled or five-winged; corolla yellow, lined with purple, the tube rather broadly cylindrical, the limb oblique, erecto-patent, broadly five-lobed; stamens included; peduncles umbellately many-flowered, in the upper axils, disposed in a terminal corymb. Leaves opposite, often ample; upper floral ones reduced to bracts. The only species introduced are here described. Both are perennials. For culture, *see* **Gesnera.**

T. nitida (shining). A synonym of *Catopsis nitida*.

T. pulchella (pretty).* *fl.*, calyx red, the lobes deltoid, serrated; corolla nearly regular, 1in. to 1⅓in. long, the tube erect, cylindrical, half as long again as the calyx. July. *l.* ovate or ovate-oblong, acute, 3in. to 7in. long, crenate-serrate above the narrow-cuneate base, scarcely petiolate. *h.* 1ft. West Indies, 1830. SYN. *Besleria pulchella* (B. M. 1146; L. B. C. 1028).

T. semi-clausa (half-closed). *fl.*, calyx cinnabar-red, campanulate, truncate; corolla golden-yellow, radiately striped with crimson-purple; umbels forming short, terminal panicles. *l.* broadly ovate, pubescent, dentate-ciliate, bright green. Stems branching, fleshy, spotted with red. Brazil, 1870. A showy plant. (I. H. ser. iii. 28.) In some varieties, the stems and petioles are violet-coloured.

TUSSILAGO (the old Latin name used by Pliny, and derived from *tussis*, a cough; alluding to the medicinal use of the leaves). Coltsfoot. ORD. *Compositæ*. A monotypic genus. The species, *T. Farfara*, is a British, scapigerous herb, with rather large, yellow flowers and cobwebby leaves. As the flower-head dies away, the scape lengthens, and finally bears a head of white, serrated pappus hairs. The leaves are used for cigar making, and are smoked in cases of asthma. The species and its variety thrive in any soil, and, if required, may be propagated by cutting up the long, creeping rhizomes. Other plants formerly included here will be found under **Homogyne, Petasites,** &c.

FIG. 136. TUSSILAGO FARFARA VARIEGATA.

Tussilago—*continued.*

T. Farfara variegata (variegated Coltsfoot).* *l.* large, broadly cordate, angled or lobed, toothed, margined or blotched with creamy-white. A pretty plant, but not one which should be indiscriminately introduced into gardens, as its creeping roots give much trouble at times. See Fig. 136.

TUSSOCK MOTHS. Species of *Bombycina*, nearly related to the Vapourer Moths (*see* **Orgyia antiqua**). By some entomologists they are included in the genus *Orgyia*; but most separate them from that genus because the females of the Tussocks have full-sized wings, while those of the Vapourer Moths are almost wingless. The Tussocks are placed in a genus named *Dasychira* (from *dasus*, hairy, and *cheir*, the hand, or fore limb; in allusion to the hairs on the first pair of legs). There are two British species, generally known as the Pale Tussock (*D. pudibunda*), or Hop-dog, and the Dark Tussock (*D. fascelina*). The males have the antennæ much fringed; while in the females they are nearly simple. In both sexes the body is heavy, and the wings are rather broad. The front pair of legs are hairy, especially in the male. The larvæ resemble those of the Vapourer Moths in having erect, brush-like tufts of hair on the middle line of the back, from the fifth to the eighth segments, and a backward-pointing tuft on the back of the twelfth segment. When full-fed, the larvæ spin slight cocoons among their food-plants, and become hairy pupæ.

The Pale Tussock (*D. pudibunda*) is about 2in. or 2¼in. in spread of the fore wings. Its general colour is grey, with three narrow, dark bands across the fore wings; or, in the male, a broad, smoke-coloured cross-bar, with darker, waved lines. The hind wings are pale grey, with a faintly darker bar. The larva is pale green, with a deep black, velvety band on the back between each two segments from the fifth to the eighth; the tufts of erect hairs on the back are yellow. The larvæ live on many trees, such as Beech, Chestnut, Lime, and Oak, and they also feed on Hops, whence the name "Hop-dog," often applied to them.

The Dark Tussock (*D. fascelina*) seldom exceeds 1⅝in. across the front wings, which are smoky-grey, with three wavy, blackish cross-bars; two of these lie close together beyond the middle of the wing. The hind wings are smoky-grey, as are also the head and body. The larvæ are dark grey, with lemon-yellow hairs, but the tufts on the back are nearly black instead of yellow. The larvæ feed occasionally on Plum and other fruit-trees, on Hazel, Heather, Oak, and various herbs. They are, however, seldom the cause of serious injury, hardly ever being abundant.

Remedies. Hand-picking, or shaking the larvæ from the branches on to sheets of paper or cloth, will prove sufficient to prevent harm, should it be threatened at any time.

TUTSAN. *See* **Hypericum Androsæmum.**

TWEEDIA. A synonym of **Oxypetalum** (which *see*).

TWIN FLOWER. *See* **Bravoa geminiflora.**

TWISTED STALK. *See* **Streptopus.**

TYCHIUS QUINQUE-MACULATUS. Larvæ of a Weevil known by this name feed in the seeds of Peas and other *Leguminosæ*. During summer, when full-fed, they fall to the soil, and become pupæ in it. The Beetles emerge from the ground in autumn, live in concealment during winter, and, in summer, the females lay eggs in the flowers, or, rather, in the ovaries of the flowers, of the food-plants. The Beetles are about ⅕in. long, and are elongate-ovate in form. The beak is long, and curves downwards The colour is black, with ruddy or yellow scales above, a white line down the middle of the thorax, and a white spot, and white inner border, on each wing-case; the body is pure white below. The thighs are toothed, and black; the rest of the legs, and the antennæ, are dull-red. The Beetles are not very common in England, which is fortunate, as it is difficult to apply a remedy—at least, while the larvæ are in the pods. A dressing of soot along the rows of Peas, towards the end of summer and autumn, would probably be of service against the pupæ in the soil.

TYDÆA (named after Tydeus, a son of Œneus, King of Calydon). ORD. *Gesneraceæ*. A small group of stove herbs, natives of tropical America, now included under *Isoloma*. The species hybridise freely, and many crosses have received distinctive names in continental gardens. For culture of the plant described below, *see* **Gesnera.**

FIG. 137. UPPER PORTION OF PLANT OF TYDÆA AMABILIS.

T. amabilis (lovely). *fl.* dark rose-coloured; corolla large, very villous, the limb of five unequal, rounded lobes, dotted with purple, the oblique tube paler-coloured within, but marked with larger dots and blotches; peduncles axillary, solitary, as long as, or the upper ones much longer than, the leaves, erect, purple below. Spring. *l.* opposite, ovate, bluntly serrate-toothed, somewhat acuminate, dull green above, pale beneath. Stem 1ft. to 2ft. or more high, greenish-purple. New Grenada, 1855. Whole plant hairy. See Fig. 137. (B. M. 4999.)

TYLE BERRY. A common name for **Jatropha multifida** (which *see*).

TYLOCHILUS. A synonym of **Cyrtopodium** (which *see*).

TYLOGLOSSA. A synonym of **Justicia** (which *see*).

TYLOPHORA (from *tylos*, a swelling, and *phoreo*, to bear; probably in reference to the coronal lobes). Including *Hybanthera*. ORD. *Asclepiadeæ*. A genus comprising about forty species of stove, twining or rarely sub-erect sub-shrubs or herbs, inhabiting tropical and sub-tropical Africa, Asia, and Australia, New Caledonia, and Norfolk Island. Flowers rather small, sometimes minute; calyx deeply five-cleft or five-parted; corolla tube short, sub-rotate, deeply five-cleft, the lobes rather broad; coronal lobes five, fleshy; cymes umbelliform or shortly racemose. Leaves opposite. The species are not very ornamental. Only three call for description here; they are all twining sub-shrubs. For culture, *see* **Hoya.**

T. asthmatica (anti-asthmatic). East Indian Ipecacuanha. *fl.* green, rather large, on long pedicels; corolla segments acute, peduncles shorter than the leaves, bearing two or three sessile, few-flowered umbels towards the apex. November. *l.* ovate or nearly round, acuminate, often cordate at base, glabrous above; petioles glandless, sub-terete. *h.* 5ft. India, 1814. (B. M. Pl. 177; B. M. 1929, under name of *Cynanchum viridiflorum*.)

T. barbata (bearded). *fl.* dingy-purple, not numerous, in one or rarely two umbels; corolla ¾in. broad, slightly bearded inside. July. *l.* on slender petioles, ovate or ovate-lanceolate, acute, not cordate, 1in. to 2in. long. *h.* 10ft. Australia, 1822.

T. grandiflora (large-flowered). *fl.* purple, one to three on a short, interpetiolar peduncle; corolla 1in. across, the lobes obtuse. July. *l.* on slender petioles, ovate to ovate-lanceolate, shortly and acutely acuminate, more or less cordate, 1in. to 2in. long, pubescent. *h.* 10ft. Australia, 1822.

TYMPANANTHE. A synonym of **Dictyanthus** (which *see*).

TYPHA (the old Greek name used by Theophrastus). Bullrush; Cat's Tail; Club-rush; Reed Mace. ORD. *Typhaceæ*. A genus comprising about ten species of slender or robust, stove or hardy, marsh-loving herbs, found in tropical and temperate regions. Male and female spadices similar, superposed, nearly terminating the peduncle, caducous or remote, naked or with a very caducous, stipitate spathe; peduncle erect, terete, straight, slender or robust, undivided. Radical leaves elongated-linear, rather thick and spongy; cauline ones few, shorter. The two British species, which thrive in rivers, ditches, and ponds, are here described. They may be increased by seeds, sown in a pot plunged nearly to the level of the soil in water; or by division of the rhizomes.

T. angustifolia (narrow-leaved). Small Bullrush. *fl.* brown; spikes ½in. to ¾in. in diameter, separated by ½in. to 1in., the female often interrupted. July. *l.* ¼in. to ¾in. broad, dark green, not glaucous, convex beneath, channelled towards the base. Plant smaller in all its parts than *T. latifolia*. (Sy. En. B. 1386.)

T. latifolia (broad-leaved). Cat-o'-nine-tails; Marsh Beetle; Reed Mace, &c. *fl.* dark brown; spikes 6in. to nearly 12in. long, 1in. in diameter, contiguous or nearly so, silky from the copious filiform perianth scales. July and August. *l.* distichous, 3ft. to 6ft. long, ¾in. to 1½in. broad, linear, obtuse, nearly flat, sub-glaucous. Stem 3ft. to 7ft. high, terete. (Sy. En. B. 1385.)

TYPHACEÆ. A small natural order of aquatic or marsh-loving herbs, with perennial rhizomes, inhabiting Europe, temperate and tropical Asia, Australia, and temperate North America. Flowers small, inserted on a monœcious spadix, or by abortion dicœcious, in heads or dense spikes; perianth none; stamens of the males numerous, accompanied by bristles or membranous scales; anthers two-celled; ovaries of the females accompanied by bristles or scales, sessile, or on long stalks when ripe. Fruits membranous or sub-drupaceous, one or rarely two-celled, sessile or stipitate. Leaves alternate, linear, entire, erect and emerging or floating, sheathing at base; cauline ones subtending the spadices, or forming an involucre before flowering. Stems cylindric, not

Typhaceæ—*continued.*

knotty, solid, simple or branched. The pollen of *Typha* is made into bread by the natives of Scind and New Zealand. Only a couple of genera—*Sparganium* and *Typha*—and sixteen species are included in this order.

TYPHONIUM (from *Typhon*, a mythological giant; the name was given by the ancients to some Aroid). Including *Heterostalis*. ORD. *Aroideæ* (*Araceæ*). A genus embracing about thirteen species of stove, tuberous, perennial herbs, inhabiting tropical Asia, Australasia, and the Pacific Islands. Flowers monœcious, the males and females remote; spathe tube convolute, accrescent, persistent, the throat constricted, the lamina ovate or lanceolate, acute or acuminate, erect or recurved, deciduous; spadix sessile or stipitate, included, the appendage variable, often stipitate; peduncle usually short. Leaves cotemporary with the flowers, sagittate or hastate, three to five-lobed or parted, or pedatisect, the petiole elongated. The species known to cultivation are described below. They thrive in light, rich soil, and during the growing season require an abundant supply of water. After the leaves have died down, water must be withheld until growth recommences. The pots containing the tubers can be stored away in any dry, warm place. Propagation is effected by division of the tubers.

T. Brownii (Brown's).* *fl.*, spathe with the convolute base ovoid, the lamina 4in. to 5in. long, very broad, of a deep purple inside; male and female spikes about ½in. long, 1in. distant; peduncle shorter than the petiole. April. *l.* divided into three narrow or broad-lanceolate lobes or segments, the lateral ones horizontally divaricate, 4in. to 6in. long, the middle one usually rather longer and narrower; petioles 6in. to 12in. long. Australia, 1875. (B. M. 6180.)

T. cuspidatum (cusped). *fl.*, spathe tube green, ovoid or oblong; lamina lanceolate, prolonged into a whip-like process, or shorter and acuminate; spadix whitish, shorter or longer than the lamina, sometimes very long, the appendix very shortly stipitate, conico-subulate; peduncle slender, scarcely one-third the length of the petioles. *l.* sagittate or hastate, oblong and scarcely cordate at base, or three-lobed or parted; petioles three or four times longer than the blades. *h.* 1ft. Bengal, Java, &c., 1819. SYN. *Arum flagelliforme* (L. B. C. 396).

T. divaricatum (divaricate). *fl.*, spathe tube oblong-ovoid, the lamina dark purple, ovate, long-acuminate; peduncle usually short. July. *l.* cordate or hastate-sagittate, somewhat three-lobed; middle lobe somewhat ovate or oblong-ovate, acute or acuminate, twice as long as the ovate or lanceolate lateral lobes; petioles slender, twice as long as the blades. *h.* 2ft. East Indies, 1759. SYNS. *T. trilobatum* (of Curtis), *Arum divaricatum*, *A. trilobatum* (B. M. 339; L. B. C. 516), *A. t. auriculatum* (B. M. 2324).

T. diversifolium Huegelianum (Huegel's variable-leaved). *fl.*, spathe erect, 4in. to 7in. long; lamina rich velvety purplish-brown inside, reticulated with pale green at base and apex; spadix shorter than the spathe; appendix 2in. to 2½in. long, blackish; ovaries purple; stigmas white. *l.* one or two, very variable in form, sagittate, hastate, or five-lobed, with the basal lobes directed upwards. Himalayas, 1879. SYN. *Heterostalis Huegeliana*.

T. trilobatum (three-lobed). *fl.*, spathe tube oblong; lamina greenish outside, rose-purple within, oblong-ovate, acuminate, four times as long as the tube; spadix with a terete, conical, shortly stipitate appendix; peduncle slender, one-third the length of the petioles. *l.* hastate, sub-tripartite; lobes all broadly ovate, acuminate; petioles nearly thrice as long as the blades. *h.* 1½ft. East Indies, 1714. SYNS. *Arum orixense* (A. B. R. 356; B. R. 450; L. B. C. 422).

T. trilobatum (three-lobed), of Curtis. A synonym of *T. divaricatum*.

TYTONIA (named after Arthur Tyton, by whom many of the oldest inhabitants of our gardens were preserved). ORD. *Geraniaceæ*. A monotypic genus, the proper name of which, according to the authors of the "Genera Plantarum," is *Hydrocera*. The species is a beautiful, stove aquatic. It should be grown in rich, loamy soil, in large pots or pans of water, and placed in a warm part of the stove. The plant may be increased by seeds, sown in spring.

T. natans (swimming). Water Balsam. *fl.* beautifully variegated with red, white, and yellow, large, irregular; sepals five, coloured; petals five, the outer front ones largest, concave; stamens five; peduncles axillary, short, one to three-flowered. July to September. *l.* alternate, narrow. Tropical Asia, 1810. SYN. *Hydrocera triflora*.

UCRIANA. A synonym of **Tocoyena** (which *see*).

UDORA. A synonym of **Elodea** (which *see*).

UGENA. Included under *Lygodium*.

UGNI. Included under **Myrtus** (which *see*).

ULEX (an old Latin name used by Pliny for some similar shrub). Furze; Gorse; Whin. Including *Stauracanthus*. ORD. *Leguminosæ*. A genus embracing not more than a dozen species of mostly hardy shrubs, with very spiny branchlets, found in Western Europe and North-western Africa. Flowers yellow, solitary or shortly racemose in the axils of the spines or scales towards the tips of the branchlets; calyx membranous, coloured, two-parted; petals shortly clawed; standard ovate; bracts small. Leaves spinescent or reduced to small scales. *U. europæus* and *U. nanus* are well-known, ornamental, British plants. All thrive in ordinary soil, and may be increased by cuttings, or by seeds.

U. europæus (European). Common Furze; Gorse; Thorn Broom, &c. *fl.* ¾in. long, odorous; calyx hairs black, spreading; bracts ovate. February and March; August and September. *l.* small; leaflets hairy. Spines sometimes furnished with minute, one-foliolate leaves. Branches spreading. *h.* 2ft. to 3ft. Western Europe, &c. (Sy. En. B. 323.) *flore-pleno* is a beautiful, double-flowered variety. The form *strictus* (Irish Furze) has erect branches.

U. Gallii (French). A variety of *U. nanus*.

U. genistoides (Genista-like). Portuguese Furze. *fl.* axillary or terminal, solitary; standard and keel tomentose outside; wings narrow, much spreading. August. *l.* small, scale-like, spiny, glabrous. Branches rigid, decussate. *h.* 1ft. to 3ft. Mediterranean region, 1823. Half-hardy. (B. R. 1452.) SYN. *Stauracanthus aphyllus*.

U. nanus (dwarf). Cat Whin; Tam Furze. *fl.* ½in. long, more racemose than in *U. europæus*; calyx adpressedly pubescent. July to November. *fr.* persistent till the following season. Spines ½in. to 1½in. long. Stems 1ft. to 3ft. high; branches drooping. England, Belgium, France.

U. n. Gallii (French). Primary spines rigid, longer than those of *U. nanus*. Branches ascending. (F. d. S. 441 *b* and Sy. En. B. 324, under name of *U. Gallii*.)

ULIGINOSE. Inhabiting swampy places.

ULLOA. A synonym of **Juanulloa** (which *see*).

ULLUCUS (from *Ulluco*, the Quitan name). SYN. *Melloca*. ORD. *Chenopodiaceæ*. A monotypic genus. The species is a half-hardy, fleshy, decumbent and twining herb, its creeping rhizome and angular stem emitting tuber-bearing roots. It is extensively grown in the mountains of Peru and Bolivia for the sake of its small tubers. As a substitute for the Potato, the plant has been unsuccessfully tried in this country. It thrives in any light soil, and may be increased by its tubers.

U. tuberosus (tuberous-rooted). *fl.* golden, in ample, axillary, loose-flowered racemes; perianth rotate, five-parted, with a very short tube; bracts at the bases of the pedicels lanceolate, persistent; bracteoles below the flowers very conspicuous. June. *l.* alternate, on thick petioles, rounded-cordate, acute, entire. *h.* 1ft. Andes of South America, 1846. (B. M. 4617; G. C. n. s., xxiii., p. 216; L. J. F. 221.)

ULMEÆ. A tribe of *Urticaceæ*.

ULMUS (the old Latin name used by Virgil, &c.). Elm. ORD. *Urticaceæ*. A genus comprising about sixteen species of hardy, unarmed trees, broadly dispersed over north temperate regions, extending in Asia to tropical mountains. Flowers polygamous, mostly hermaphrodite, fascicled; perianth loosely campanulate, four to nine (often five) cleft, the lobes imbricated; stamens four to eight (often five); filaments erect, at length exserted. Fruit a one-seeded samara. Leaves alternate, distichous, serrated, penniveined, deciduous or sub-perennial; stipules lateral, scarious, very caducous. Elm wood is rather hard, and reddish; it is used specially for wheelwrights' work, shafts, axletrees, screws for presses, &c. Exotoses or wens are often developed on Elm trunks, which acquire great hardness, and are much sought for by cabinet-makers, from the different patterns exhibited by the twisted arrangement of their wood fibres. Elm-trees arrive at perfection

Ulmus—*continued.*

in 150 years, but they will live for more than four times that period. They were held in high estimation by the ancients, not only on account of their leaves, which were dried and used as fodder, but also on account of their being used as props for Vines. The common Elm (*U. campestris*) grows very rapidly in light, rich land; but its wood is proportionately light and porous, and of little value compared with that grown on strong land, which is of a closer and stronger texture, and at the heart will have the colour, and almost the hardness and weight, of iron. Propagation is effected by layers, suckers, grafting, and budding. Layers are usually made in autumn, or in the course of the winter, and become rooted, or fit for removal, in the course of a year. Suckers are produced in abundance by some of the species and varieties, and afford a ready means of increase. Whip or splice-grafting is best performed, close to the root, in spring; the plants thus treated make shoots of 3ft. or 4ft. in the same year, and never throw up suckers, unless the graft is buried in the soil. The Scotch Elm (*U. montana*) luxuriates in a deep, rich loam; but it becomes most valuable in a sandy loam lying on rubble-stone or on dry rock. It is most readily propagated by seeds; these may be sown as soon as ripe (about the middle of June), in which case many plants will be obtained in the same season; or they may be dried in the shade, and stored in bags or boxes, in a dry place, until the following March or April. *U. americana* delights in a low, humid situation. Its wood is inferior to that of the common Elm. The species best-known to cultivation are here described; all have brownish flowers, appearing from March to May.

FIG. 138. LEAF AND FRUIT-BEARING TWIGS OF ULMUS CAMPESTRIS.

U. alata (winged). Wahoo or Winged Elm. *fl.* on slender, drooping, jointed pedicels or peduncles; perianth segments obovate. *fr.* ovate or oval, downy on the face, at least when young, fringed-ciliated. *l.* ovate-oblong and oblong-lanceolate, acute, rather thick, 1in. to 2½in. long, smooth or nearly so above, downy beneath. Branches (at least some of them) corky-winged; branchlets and bud-scales nearly glabrous. *h.* 30ft. to 40ft. North America, 1820.

Ulmus—*continued.*

U. americana (American).* American or White Elm. *fl.* in close fascicles, on slender, drooping peduncles or pedicels, which are jointed above the middle; perianth seven to nine-lobed; fascicles close. *fr.* oval or ovate, glabrous, except on the margins, ¼in. long. *l.* obovate-oblong or oval, abruptly acute, sharply and often doubly serrated, 2in. to 4in. long, smooth or nearly so above, softly pubescent or soon glabrous beneath. Branches not corky; branchlets and buds glabrous. *h.* 80ft. to 100ft. North America, 1752. An ornamental tree. (T. S. M. p. 322.)

FIG. 139. YOUNG SHOOT OF ULMUS CAMPESTRIS ROTUNDIFOLIA.

U. campestris (field-loving).* Alme; Aume-tree; common Elm. *fl.*, perianth smaller than in *U. montana*; stamens often four. *fr.* usually obovate. *l.* 2in. to 3in. long, less cuspidate than in *U. montana*, often narrow at base, scabrid above and pubescent beneath, or nearly glabrous. Trunk attaining 20ft. in girth, with rugged bark; root sending up abundant suckers. *h.* 125ft. Europe (Britain). See Fig. 138. (B. M. Pl. 232.) SYN. *U. carpinifolia*. *U. glabra* and *U. suberosa* are regarded, by Hooker, as mere varieties of this species; but for gardening purposes they are kept distinct in this work.

U. c. acutifolia (acute-leaved). *l.*, in old specimens, more tapering, and branches more pendulous, than in *U. c. alba*, which this variety otherwise resembles.

U. c. antarctica (Antarctic). A graceful, small-leaved form, somewhat resembling *U. c. viminalis*. The name of this form is very inappropriate, as there are no Elms in the Southern hemisphere.

U. c. aurea (golden). This is one of the most distinct and desirable of all the ornamental Elms; it has foliage like that of *U. c. antarctica*, but of a uniform golden-bronze colour. (B. H. 1866, 19; I. H. 513.) SYN. *U. Rosenlsii*.

U. c. Berardi (Berard's). A distinct and pretty form, of somewhat erect habit, with small, rather rigid leaves. This originated as a seedling in the nurseries of Simon-Louis Bros., near Metz.

U. c. betulæfolia (Birch-leaved). *l.* somewhat resembling those of the common Birch.

U. c. chinensis (Chinese). A low and rather tender bush. China.

U. c. concavæfolia (concave-leaved). This is scarcely distinct from *U. c. cucullata*.

U. c. cornubiensis. Cornish Elm. *l.* small, strongly veined, coriaceous. Branches bright brown, smooth and somewhat flexuous when young, and very compact, becoming upright with age. "This variety, in the climate of London, is a week or a fortnight later in coming into leaf than the common Elm, from which, and from all other varieties, it is readily distinguished by the bark of old trees, which never scales off, but tears asunder, exhibiting its fibrous construction, in the manner of the bark of the Sweet Chestnut. There are many fine trees of this variety in Kensington Gardens." (Loudon.)

U. c. cucullata (hooded). *l.* curiously curved, something like a hood.

Ulmus—*continued.*

U. c. foliis-variegatis (variegated-leaved). *l.* striped with white, very ornamental in spring.

U. c. latifolia (broad-leaved). *l.* broader than in the species, and expanding very early in spring.

U. c. nana (dwarf). This very distinct variety is said not to grow above 2ft. high in ten or twelve years.

U. c. parvifolia (small-leaved). A very common variety in all the woods of the South of Russia, and varying in height from that of a medium-sized tree to that of a diminutive shrub, according to soil and climate.

U. c. planifolia (flat-leaved). A handsome, small tree, closely resembling *U. c. parvifolia*.

U. c. rotundifolia (round-leaved). This form is characterised by its roundish-oval or sub-orbicular leaves. See Fig. 139.

U. c. sarniensis. Jersey Elm. A free-growing variety, differing very little from the type.

U. c. stricta (upright). Red English Elm. One of the most valuable timber-trees of the small-leaved kinds; growth very rigid. The timber is of excellent quality, and the tree forms poles of equal diameter throughout.

U. c. tortuosa. Twisted Elm. This is the only Elm that grows freely from cuttings. The wood of the tortuous parts of the trunk is valuable for the naves of wheels.

U. c. umbraculifera (umbrella-bearing). A compact-growing form, with a dense, umbrella-like head.

U. c. viminalis (twiggy). *l.* small. Branches numerous, slender, twig-like. A very distinct and elegant variety.

U. c. virens (green). Kidbrook Elm. "Almost evergreen in a mild winter; and, as such, is the most ornamental tree of the genus. It must not, however, be depended upon as a timber-tree, because, in some autumns, the frost kills the shoots. The bark is red, and the tree of spreading habit. This, like *U. c. stricta*, grows well upon chalk." (Loudon.)

U. carpinifolia (Hornbeam-leaved). A synonym of *U. campestris*.

U. effusa (effuse). A synonym of *U. pedunculata*.

U. fulva (fulvous). Slippery or Red Elm. *fl.* nearly sessile; perianth segments and stamens seven to nine. *fr.* orbicular, eight to nine lines wide, not ciliated, the cell pubescent. *l.* ovate-oblong, acuminate, doubly serrated, 4in. to 8in. long,

FIG. 140. LEAFY AND FLOWER-BEARING TWIGS OF ULMUS GLABRA.

Ulmus—*continued.*

very rough above, softly downy beneath, and slightly rough downwards, sweet-scented in drying. Branchlets downy; buds before expansion, softly downy with rusty hairs. North America. A small or medium-sized tree, with tough, reddish wood, and a very mucilaginous inner bark. (B. M. Pl. 233; T. S. M. p. 334.)

U. glabra (smooth). Wych Elm. *fl.* nearly sessile, five-cleft. *fr.*, samaras obovate, naked, deeply cloven, smaller than those of most other kinds. *l.* elliptic-oblong, doubly serrated, smooth, very unequal at base, not elongated at the extremity. *h.* 60ft. to 80ft. Europe (Britain). See Fig. 140. (Sy. En. B. 1286, under name of *U. suberosa glabra*.) Hooker regards this as merely a form of *U. campestris*.

U. g. glandulosa (glandular). *l.* very glandular beneath.

U. g. latifolia (broad-leaved). *l.* oblong, acute, very broad.

U. g. major (greater). Canterbury Seedling. Of more vigorous growth than the type.

U. g. microphylla (small-leaved). *l.* small.

U. g. pendula (pendulous). Downton Elm. A "weeping" variety.

U. g. variegata (variegated). *l.* variegated.

U. g. vegeta (vigorous).* Chichester or Huntingdon Elm. The most vigorous kind of Elm propagated in British nurseries, often making shoots from 6ft. to 10ft. in length in one season. The tree attains a height of 30ft. in ten years from the graft.

U. major (greater). A form of *U. montana*.

U. montana (mountain-loving).* Scotch or Wych Elm. *fl.* shortly pedicellate, five to seven-parted. *fr.*, samaras oblong or nearly round, glabrous, slightly cloven. *l.* 3in. to 6in. long, often 3in. in diameter, doubly and trebly serrated, cuspidate, unequally rounded or cordate at base, rough above, pubescent or nearly glabrous beneath. Branches long, spreading. *h.* 80ft. to 120ft. Europe (Britain), Siberia. (Sy. En. B. 1287.) Most of the following varieties are distinct and handsome trees, and are well worth cultivating, either for use or for ornament:

U. m. cebennensis (Cevennes). A variety of spreading habit, but of much less vigorous growth than the normal form.

U. m. crispa (curled). *l.* crisped, thickly plicate-rugose, irregularly incised-pinnatifid. Habit slender and stunted. SYN. *U. urticæfolia*.

U. m. fastigiata (pyramidal). Exeter or Ford's Elm. *l.* peculiarly twisted, very harsh, feather-nerved, enfolding one side of the shoots, retaining their deep green until they fall off. A very remarkable, pyramidal form.

U. m. major (greater). *l.* falling almost a month sooner than those of *U. m. minor*. This tree is of upright and rapid growth, with few branches; in some stages, it approaches the habit of the type, but is of a more tapering form.

U. m. minor (lesser). Compared with *U. m. major*, this is of a more branching and spreading habit, of lower growth, with more twiggy shoots, which are more densely clothed with leaves.

U. m. nigra (black). Black Irish Elm. A spreading tree, with the habit of the normal form, but with more spreading leaves.

U. m. pendula (pendulous). "A beautiful and highly characteristic tree, generally growing to one side, spreading its branches in a fan-like manner, and stretching them out sometimes horizontally, and at other times almost perpendicularly downwards, so that the head of the tree exhibits great variety of shape." (Loudon.)

U. m. rugosa (wrinkled). Bark reddish-brown, cracking into short, regular pieces, very like that of *Acer campestre*.

U. parvifolia (small-leaved). *fl.* shortly pedicellate; perianth four or five-cleft. *fr.* small, ciliated. *l.* small, narrow-lanceolate, oblique at base, slightly acute or scarcely acuminate at apex, simply serrated; adults coriaceous, highly glabrous, or the middle nerve and under side sparsely puberulous. Branches twiggy, often arcuate-deflexed. China and Japan. A medium-sized or diminutive shrub, according to the soil in which it grows.

U. pedunculata (pedunculate). *fl.*, perianth oblique; stamens six to nine, often eight, shortly exserted; pedicels slender, elongated, jointed; inflorescence pendulous. *fr.* glabrous, except the densely-ciliated margin. *l.* ovate or obovate, acuminate, deeply and doubly serrated, slenderly membranous, softly pubescent beneath. *h.* 50ft. to 60ft. Europe, 1800. SYN. *U. effusa*.

U. Roseelsii (Roseels'). A synonym of *U. campestris aurea*.

U. suberosa (slightly erose). Cork-barked Elm. *fl.* stalked, four or five-cleft. *fr.*, samaras almost orbicular, deeply cloven, glabrous. *l.* pointed, rough, doubly and sharply serrated. Branches spreading, their bark corky. *h.* 60ft. to 100ft. Europe (Britain). According to Hooker, this is merely a form of *U. campestris*. (Sy. En. B. 1285.)

U. s. erecta (erect). This tree has a tall, narrow head, resembling that of the Cornish Elm (*U. campestris cornubiensis*); but it differs from that variety in having much broader leaves and a corky bark.

U. s. foliis-variegatis (variegated-leaved). This is only distinguished from the type by its variegated leaves.

U. urticæfolia (Nettle-leaved). A synonym of *U. montana crispa*.

ULNA. The average length of a man's arm—about 2ft.

ULOSTOMA. A synonym of **Gentiana** (which *see*).

ULUXIA. A synonym of **Columellia** (which *see*).

UMBEL. An inflorescence in which the flowers expand centripetally, and their stalks radiate from a common centre. A simple Umbel is shown in Fig. 141.

FIG. 141. SIMPLE UMBEL OF ASTRANTIA HELLEBORIFOLIA.

UMBELLATE. Disposed in or resembling umbels.

UMBELLET, UMBELLULA. A secondary or partial umbel; an umbel formed at the end of one of the rays of a general umbel.

UMBELLIFERÆ. A large natural order of herbaceous or rarely woody plants, principally inhabiting the Northern hemisphere. Flowers hermaphrodite or often polygamo-monœcious, rarely dicœcious, umbellate or rarely capitate or whorled; calyx five-lobed, or almost wanting; petals five, valvate or sub-imbricate in bud, inserted outside an epigynous disk, free, caducous, the points generally inflexed, sometimes two-cleft or two-parted, the outer often largest; stamens five, alternate with, and inserted like, the petals; filaments inflexed in bud; anthers two-celled, introrse; umbels simple, or often duplicate-compound, terminal, solitary or many in a panicle. Fruit dry, two-celled, dividing into two mericarps, the surface marked with ten more or less prominent ridges. Leaves usually alternate, entire or variously toothed, cut, lobed, or pinnate; petioles usually dilated at base. Stem usually furrowed or channelled, knotty, fistular or full of pith. Among the useful Umbellifers, the following (indigenous to Britain) may be noted: Carrot (*Daucus Carota*), Chervil (*Anthriscus Cerefolium*), Parsley (*Carum Petroselinum*), and Parsnip (*Peucedanum sativum*). The order embraces upwards of 150 genera and about 1300 species, few of which are remarkable for horticultural beauty. Illustrative genera are: *Apium*, *Daucus*, *Myrrhis*, *Narthex*, *Peucedanum*, *Sium*, *Smyrnium*.

UMBELLIFEROUS. Umbel-bearing.

UMBELLULARIA (a diminutive from *umbella*, a sunshade, an umbel; in allusion to the form of inflorescence). SYNS. *Drimophyllum*, *Oreodaphne*. ORD. *Laurineæ*. A monotypic genus. The species is a half-hardy, tall, evergreen tree or (on mountains) shrub, emitting a strong odour of camphor. For culture, *see* **Laurus**.

U. californica (Californian). Californian Sassafras. *fl.* greenish-yellow, shortly pedicellate, in solitary, cano-pubescent or glabrous umbels; perianth tube very short, the limb of six segments; involucres pedunculate, solitary in the upper axils, or clustered at the tips of the branches, very caducous. June. *l.* alternate, highly odorous, lanceolate-oblong, slightly narrowed at both ends, 2in. to 4½in. long, penniveined and singularly reticulated. Branchlets twiggy, slender, mostly glabrous. *h.* sometimes as much as 100ft. California, 1862. SYNS. *Ocotea californica*, *Oreodaphne californica* (B. M. 5320).

UMBER MOTHS. Under this name are included two species of Geometer Moths, belonging to the genus **Hybernia** (which *see*), viz., *H. defoliaria*, or the Mottled

Umber Moths—*continued.*

Umber (see Fig. 142), and *H. aurantiaria*, or the Scarce Umber. The latter species, despite its popular name, is by no means rare, while the former is abundant; though neither species is often seen, owing to the perfect insects appearing towards the end of autumn, and being nocturnal in their habits. The females have only stumps of wings, and, being totally unable to fly, they have to crawl up the tree trunks to lay their eggs on the buds. The males have large, conspicuous wings, and fly in search of the females. The two species of Umber Moths are nearly alike in size and form, but differ in colours and markings.

FIG. 142. MOTTLED UMBER MOTH (HYBERNIA DEFOLIARIA), showing Male, Female, and Larva.

The Mottled Umber has the body brown, with two rows of dark spots on the back of the abdomen. The fore wings of the male are usually pale brown, with two dark brown, rather irregular cross-bands, and a dark central spot, and the hind wings are paler, with a brown central spot. In some males, the wings are reddish-brown, closely sprinkled with darker dots, and other variations are not rare. The larva feeds on almost all kinds of trees. It is cylindrical, and rather slender, with six true legs in front, and four prolegs or claspers behind. The back is brown, bordered on each side by a narrow, waved, black band, and crossed by grey markings. The sides are bright yellow; but the spiracles are white, and are surrounded by brown spots.

The Scarce Umber Moth has the body orange-brown, with darker spots, as in the other species. The fore wings of the male are dull orange, with three darker narrow cross-bars, two near the base, and the other beyond the middle. Beyond the latter, near the margin, is a row of brownish spots. The hind wings are paler, and all the wings have a dark central dot. The larva feeds on Whitethorn, and occasionally on Oak and Birch. It is at first deep yellow, but when full fed it is dark dusky-green, with a pale brown stripe down the middle of the back.

The pupæ of both species are protected in slight cocoons on the surface of the ground.

Remedies. The females are unable to fly on to the trees; and they may be prevented from crawling up if a ring of tar and cart-grease, mixed in equal parts, is painted on the trunk near the ground, or on a belt of cloth or paper, or on a straw rope, fastened around the tree. The larvæ

Umber Moths—*continued.*

may be shaken off by jarring the branches, and should be collected on sheets of cloth or paper and destroyed. All surface rubbish that could shelter the pupæ should be cleared off.

UMBILICATE. Navel-like; depressed in the centre.

UMBILICUS. Included under **Cotyledon** (which *see*).

UMBONATE. Round, with a projecting point in the centre, like the boss or *umbo* of an ancient shield; *e.g.*, the pileus of many Agarics.

UMBRACULIFORM. Umbrella-shaped.

UMBRELLA LEAF. *See* **Diphylleia cymosa.**

UMBRELLA PINE, or **PARASOL FIR.** *See* **Sciadopitys verticillata.**

UMBRELLA PLANT. *See* **Saxifraga peltata.**

UMBRELLA TREE. *See* **Magnolia Umbrella** and **Thespesia populnea.**

UMBRELLAWORT. *See* **Oxybaphus.**

UNANUEA. A synonym of **Stemodia** (which *see*).

UNARMED. Destitute of prickles, spines, or other hard projections; pointless.

UNCARIA (from *uncus*, a hook; the old petioles are converted into hooked spines). SYNS. *Agylophora, Ourouparia.* ORD. *Rubiaceæ.* A genus comprising about thirty species of stove, climbing shrubs, all tropical Asiatic, except one African and one American. Flowers yellowish, in globose, axillary, pedunculate, solitary or paniculate heads; calyx tube spindle-shaped, the limb five-lobed or parted; corolla tube long, funnel-shaped, the limb of five valvate lobes; stamens five, on the glabrous throat of the corolla; peduncles often headless, converted into hooked tendrils. Leaves opposite, shortly petiolate; stipules entire or bifid. *U. Gambier*, the only species calling for description here, thrives in a compost of loam, sand, and peat. Propagation may be effected by cuttings, inserted in sand, under a glass, in heat.

U. Gambier (Gambier). Gambier Catechu. *fl.* pedicellate; calyx tomentose; corolla ½in. long; peduncles all axillary, bracteate in the middle, rarely more than 1in. long. May. *l.* ovate or ovate-lanceolate, obtusely sub-caudate or acuminate, 4in. to 5in. long, coriaceous, glabrous. *h.* 10ft. India, 1825. The gambier of commerce is obtained from this species. (B. M. Pl. 139.)

UNCARIA (of Burchell). A synonym of **Harpagophytum** (which *see*).

UNCATE, UNCIFORM, UNCINATE. Bent or curved at the tip like a hook.

UNCIFERA (from *uncus*, a hook, and *fero*, to bear; alluding to the curved process to which the pollen masses are attached). ORD. *Orchideæ.* A small genus (three species) of stove, epiphytal Orchids, natives of Khasya. Flowers rather small or mediocre, very shortly pedicellate, in lateral, dense, spike-like racemes; sepals sub-equal, free; petals similar or rather smaller; lip affixed to the base of the column, the base produced in a rather long, curved spur; lateral lobes small, the middle one entire or slightly three-lobed; pollen masses two. Leaves distichous; sheaths persistent, clothing the stem. *U. heteroglossa*, the only species introduced, is mainly of botanical interest. It thrives on a block or in a basket.

Uncifera—*continued.*

U. heteroglossa (variable-lipped). *fl.* white (?); sepals and petals oblong, blunt; lip hollowed out, the front border thickened; spur ascending, hooked; raceme rather short, pale, closely speckled with red. 1878.

UNCINATE. *See* **Uncate.**

UNDER-SHRUB. A small, woody plant, the ends of its branches perishing annually.

UNEDO. A synonym of **Arbutus** (which *see*).

UNEQUALLY PINNATE. Pinnate, with an odd, terminal leaflet.

UNGNADIA (named after Baron von Ungnad, the introducer of the Horse Chestnut). ORD. *Sapindaceæ.* A monotypic genus. The species is a half-hardy shrub or small tree, allied to *Pavia.* It is best grown in the open air in summer, and removed to a cool conservatory for winter. It will thrive in almost any soil, and may be propagated by layering, or by imported seeds.

U. speciosa (showy). *fl.* pink, polygamous, in lateral, aggregated corymbs or fascicles; calyx sub-equal, four or five-partite; petals four or five, sub-equal, the claws connate-crested at apex; stamens seven to ten. June. *l.* alternate, exstipulate, impari-pinnate; leaflets six or seven pairs, 4in. long, very shortly petiolulate, ovate-lanceolate, obtuse and acuminate, the terminal one long-petiolulate. Texas, 1850. (F. d. S. 1059.)

UNGUACHA. A synonym of **Strychnos** (which *see*).

UNGUICULATE. A term applied to petals which have an *unguis* or stalk.

UNI. This term, used in Latin compounds, signifies one: *e.g.*, Uniflorous, one-flowered; Unijugate, of one pair; Unilateral, one-sided; Unisexual, of one sex, having stamens only or pistils only.

UNICORN BEETLE (*Copris lunaris*). This can scarcely be included among Garden Insects, strictly so called; yet a brief notice of it will not be out of place, as it may at times be found in gardens in the South-east of England, especially around London, and is sure to attract notice on account of the curious horn on the head. The

FIG. 143. MALE UNICORN BEETLE (COPRIS LUNARIS), about twice the natural size.

general form is shown in Fig. 143, which is, however, about twice the natural size. The colour is glossy black, with a fringe of chestnut hairs round the edge of the body. The head and thorax of the males bear outgrowths or horns, as shown in the figure. The wing-cases are grooved lengthwise. The horns of the females are much less conspicuous. These Beetles are beneficial, rather than otherwise, in gardens, inasmuch as the females make burrows in the soil, and carry dung into them for the nourishment of the larvæ, which are hatched from eggs deposited among it.

UNICORN PLANT. A common name for *Martynia lutea* and *M. proboscidea.*

UNINTERRUPTED. Consisting of regularly increasing or diminishing parts, or of parts of the same size.

UNIOLA (from *unus*, one; so-called by Linnæus owing to the union of the glumes). Spike Grass. SYNS. *Chasmanthium, Trisiola.* ORD. *Gramineæ.* A small genus (four species) of hardy and half-hardy, perennial Grasses, natives of North America. Spikelets closely many-flowered, very flat and two-angled; glumes lanceolate, compressed-keeled; stamens three; panicles sometimes elongated, sometimes ample, loose or dense. Leaves flat or convolute. Perhaps the most ornamental species are described below. Seeds should be sown, in early spring, in the open border.

U. latifolia (broad-leaved). *fl.* acute, ciliated on the keel, all but the lowest perfect and monandrous; spikelets at length oblong, 1½in. to 2in. long, hanging on long pedicels; panicle loose. August. *l.* nearly 1in. broad, flat. Culm 2ft. to 4ft. high. (B. H. vii., p. 192.)

U. paniculata (prominent-panicled). *fl.* glabrous, bluntish, several of the lower ones sterile, the fertile ones with three stamens; spikelets ovate, 1½in. to 2in. long, on short pedicels; panicle open, elongated. *l.* narrow, convolute when dry. Culm elongated. *h.* 4ft. to 8ft.

UNISEMA. A synonym of **Pontederia** (which *see*).

UNONA (probably a variation from *Anona*, an allied genus). ORD. *Anonaceæ.* A genus embracing eighteen species of stove trees or climbing shrubs; four or five are found in Africa and the rest in tropical Asia. Flowers mostly solitary, axillary or extra-axillary, rather large; sepals three, valvate; petals six, valvate or open in æstivation, biseriate; stamens numerous, tetragonal-cuneate. Leaves alternate, entire, exstipulate. Several species have been introduced, but are probably lost to cultivation.

UPAS-TREE. *See* **Antiaris toxicaria.**

UPLAND WILLOW OAK. *See* **Quercus cinerea.**

UPRIGHT PORTUGAL LAUREL. A common name for **Cerasus lusitanica myrtifolia** (which *see*).

URALEPIS. A synonym of **Triodia** (which *see*).

URALEPSIS. *See* **Triodia.**

URANANTHUS. A synonym of **Eustoma** (which *see*).

URANIA. A synonym of **Ravenala** (which *see*).

URARIA (from *oura*, a tail; alluding to the bracts). SYN. *Doodia* (of Roxburgh). ORD. *Leguminosæ.* A genus embracing eight species of stove, suffruticose perennials, inhabiting tropical Asia, Africa, and Australia. Flowers very numerous, minute, racemose; calyx tube very short, the two upper teeth short, the three lower ones usually elongated; standard broad; wings adhering to the obtuse keel; stamens diadelphous. Leaves stipellate; leaflets one to nine. Several species have been introduced; but it is doubtful whether any are in cultivation. Those described below thrive in a compost of sand, loam, and peat. Propagation may be effected by cuttings, inserted in sand, under a glass, in heat.

U. crinita (hairy). *fl.* purplish, ¼in. long; racemes dense, above 1ft. long. July. *l.*, upper ones three to seven-foliolate; leaflets oblong, sub-coriaceous, green and smooth above, paler and reticulate-veined beneath, 4in. to 6in. long, 1½in. to 2in. broad, rounded at base. *h.* 3ft. to 6ft. India.

U. picta (painted). *fl.* purple; corolla slightly exserted; racemes dense, cylindrical, 6in. to 12in. long. July. *l.*, leaflets four to six, rarely nine, linear, rigidly sub-coriaceous, glabrous above, minutely pubescent beneath. Stems robust, finely downy. *h.* 3ft. to 6ft. Himalayas, Philippines, &c., 1788.

URCEOLARIA (of Cothenius). A synonym of **Schradera** (which *see*).

URCEOLARIA (of Herbert). A synonym of **Urceolina** (which *see*).

URCEOLATE. Hollow and contracted at or below the mouth, like a pitcher.

URCEOLINA (from *urceolus*, a small cup or pitcher; alluding to the shape of the perianth). SYNS. *Collania*, *Urceolaria* (of Herbert). Including *Leperiza* (in part), *Pentlandia*, and *Sphærotele* (of Link). ORD. *Amaryllideæ*. A small genus (three species) of greenhouse, bulbous plants, inhabiting the Andes of South America. Flowers many in an umbel, rather long-pedicellate; perianth erect, at length recurved or pendulous, contracted above the ovary, and then enlarged into an oblong-tubular or urceolate throat or limb, the lobes sub-equal, connivent or connate, shortly spreading at apex; stamens equally affixed to the throat, often exceeding the perianth; filaments straight; involucral bracts two, scarious; scape solid. Leaves flat, ovate, oblong, or narrow, contracted into the petioles. For culture, *see* **Amaryllis.**

U. aurea (golden). A garden synonym of *U. pendula*.

U. latifolia (broad-leaved). *fl.*, perianth segments yellowish-red, greenish at apex, ovate, minutely acuminate, connivent, equal; scape erect, 1ft. or more high, solitary, terete. April. *l.* petiolate, oblong, acute, 1ft. long, 2in. to 3in. broad, striated above, shining, nerved beneath, glabrous. SYN. *Leperiza latifolia* (B. M. 4952).

U. miniata (scarlet). *fl.* nodding; perianth cinnabar-red or scarlet, 1¼in. long, glabrous, the segments broadly ovate, acute; scape erect, slightly twisted above, 8in. to 14in. long. September. *l.* one or two, lanceolate, acute, narrowed and sub-petiolate, 6in. to 8in. long, striated above, the margins reflexed. Bulb as large as a walnut. 1836. SYN. *Pentlandia latifolia* (B. R. 1839, 68).

FIG. 144. URCEOLINA PENDULA.

U. pendula (pendulous). Drooping Urn Flower. *fl.* pendent; perianth yellow in the basal half, green above, margined with white, 2in. long; segments lanceolate, concave, the three outer ones longer. June. *l.* solitary or twin, long-petiolate, erect, many-nerved, glabrous; petioles terete, compressed above. See Fig. 144 (for which we are indebted to Messrs. Veitch and Sons). (B. M. 5464.) SYNS. *U. aurea* (of gardens), *Collania urceolata*.

URECHITES (from *oura*, a tail, and *Echites*, an allied genus; in allusion to the twisted appendages of the corolla). ORD. *Apocynaceæ*. A small genus (four species ?) of prostrate or twining, glabrous or puberulous, stove undershrubs, natives of the West Indies and Mexico. Flowers usually ample; calyx five-parted, glandular inside at base; corolla funnel-shaped, with a short, cylindrical tube, a long tubular-campanulate throat, and five broad, twisted lobes; stamens affixed at the top of the tube; racemes simple, often few-flowered, or reduced to two flowers. Leaves opposite, penniveined. Only one species calls for mention here. For culture, *see* **Dipladenia.**

U. sub-erecta (nearly erect). *fl.* full-yellow, large, on short pedicels; peduncle terminal, hairy, bearing a loose, four to six-flowered cyme. May. *l.* shortly petiolate, ovate or oval, nearly

Urechites—*continued.*

elliptical, but rather acute at each end; young ones (and branches) loosely silky. Stem shrubby in the older portions. New Grenada, 1845. SYNS. *Dipladenia flava* (B. M. 4702), *Echites suberecta* (B. M. 1064).

URENA (from *Uren*, the Malabar name). Indian Mallow. ORD. *Malvaceæ*. A small genus (four or five species) of stove herbs or under-shrubs, inhabiting the tropical regions of both hemispheres. Flowers small, sessile or shortly pedunculate, usually clustered; bracteoles five, adnate to the five-cleft or five-toothed calyx; petals five; staminal tube truncate or minutely toothed. Leaves often angular or lobed. The species are mostly uninteresting. *U. lobata*, the only one calling for mention, thrives in any light, rich soil. Propagation may be effected by seeds.

U. lobata (lobed-leaved). *fl.* pink; bracteoles oblong-lanceolate, equalling the calyx. Summer. *l.* cordate, five to seven-lobed, the lobes acute or obtuse; petioles usually shorter than the blades. India. A very variable, more or less hairy, annual herb. (B. M. 3043.)

URGINEA (from the name of an Arab tribe, Ben Urgin, in Algeria). Including *Squilla*. ORD. *Liliaceæ*. A genus comprising about two dozen species of stove, greenhouse, or hardy, bulbous plants, natives of Europe, the Mediterranean region, the East Indies, and tropical and South Africa. Flowers usually numerous, in a terminal raceme, rather small or mediocre, on articulated pedicels; perianth whitish or rarely pale yellowish or pink, at length deciduous; segments six, distinct, nearly equal, campanulate-connivent or spreading; stamens six; scape simple, leafless; bracts small, scarious. Leaves radical, sometimes very narrow-linear, sometimes broadly loriform or nearly oblong. The bulbs of *U. maritima* are well-known in medicine as Squills. The species best known in gardens are here described. With the exception of *U. maritima*, all are natives of South Africa, and require greenhouse heat. For culture, *see* **Scilla.**

U. altissima (very tall). *fl.*, perianth nearly campanulate, three to four lines long, the segments whitish, with a purplish-green keel, ligulate; pedicels slightly spreading or ascending, the lower ones six to nine lines long; raceme cylindrical, dense, 1ft. to 2ft. long, 1½in. to 2in. broad; scape 2ft. to 3ft. long, ½in. or more thick. May. *l.* five or six, lorate-lanceolate, glabrous, 1ft. to 1½ft. long, 1½in. to 2in. broad at base, acute at apex. Bulb globose, 4in. to 6in. thick. 1789. SYN. *Drimia altissima* (B. M. 1074).

U. exuviata (stripped). *fl.*, perianth five to six lines long, the segments whitish, purple-keeled; pedicels ascending, the lower ones four to six lines long; raceme rather dense, ten to twenty-flowered, 2in. to 4in. long. June. *l.* two to four, hard, semi-terete, glabrous, flexuous, 1in. to 1½in. long, half to three-quarters of a line broad. Bulb globose, 1in. to 1¾in. thick, the outer scales long-produced, transversely striped. 1795. "Jacquin applied the specific name of *exuviata* from some resemblance in the membranous tunics of the bulb to the sloughs annually cast by snakes." SYN. *Albuca exuviata* (B. M. 871).

U. filifolia (thread-leaved). *fl.*, perianth three to four lines long, the segments whitish, purple-keeled, oblong; pedicels three to six lines long; raceme rather dense, six to twenty-flowered; scape erect, slender, 6in. to 15in. long. June. *l.* three to six, filiform, hard, glabrous, flexuous, 8in. to 12in. long, a quarter to half a line thick. Bulb globose, 1in. thick, fuscous-tunicated. 1820. SYN. *Albuca filifolia* (B. R. 557).

U. fragrans (fragrant). *fl.* odorous; perianth five to six lines long, the segments whitish, purple-keeled, oblong; pedicels four to six lines long; raceme rather loose, twelve to twenty-flowered, 4in. to 6in. long; scape slender, terete, glaucous, 1ft. long. July. *l.* twelve to twenty, semi-terete, glabrous, persistent, 6in. to 8in. long, half a line broad. Bulb globose, 1½in. to 2in. thick. 1791. SYN. *Albuca fugax* (B. R. 311).

U. maritima (sea-loving).* Sea Onion; Squills. *fl.*, perianth three to four lines long, the segments whitish, with a greenish-purple keel; pedicels six to nine lines long; raceme dense, 1ft. or more long; scape 1ft. to 3ft. long, terete, reddish. Autumn. *l.* appearing in spring, ten to twenty, lanceolate, fleshy-herbaceous, glaucous-green, glabrous, 1ft. to 1½ft. long, 2in. to 4in. broad above the middle. Bulb ovoid, 4in. to 6in. thick. Mediterranean region, 1829. Half-hardy. SYNS. *U. Scilla* (B. M. Pl. 281), *Ornithogalum Squilla* (B. M. 918).

U. physodes (bladder-like). *fl.*, perianth ¼in. long, the segments whitish, purple-keeled; pedicels eight to ten lines long; raceme rather dense, thirty to sixty-flowered, 3in. to 5in. long, cylindrical;

Urginea—*continued.*

scape slender, 6in. long. June. *l.* five or six, lanceolate, fleshy-herbaceous, glabrous, 6in. to 9in. long, 1in. to 1½in. broad. Bulb purplish, 1½in. to 1¾in. thick. 1804. SYN. *Albuca physodes* (B. M. 1046).

U. Scilla (Scilla). A synonym of *U. maritima.*

URINE. An excellent manure, because of the substances contained in it. Of these, one of the most important is Ammonia, either uncombined, or united with various acids to form compounds. From these substances plants are able to obtain the Nitrogen required for the production of protoplasm. There are also various mineral compounds in solution in Urine, in a form available for plants; in fact, the Urine of most animals is of more value as a manure than their solid excrement. Analysis of various Urines gives the following results: Urine of cattle contains 8 per cent. of solid matters; of horses, 11 per cent.; of sheep, 13 per cent.; of pigs, 25 per cent.; and of man, from 3 to 6 per cent. Amongst the substances in Urine are Carbonates, Phosphates, Chlorides, and Sulphates of Ammonia, and of other alkalies, along with a good deal of Urea and of Uric Acid. The two last substances readily undergo chemical changes into Ammonia and its compounds. The addition to the Urine of Gypsum, or of coarse Sulphuric Acid, forms Sulphate of Ammonia, and thus prevents the loss of the Ammonia by evaporation into the atmosphere. Urine should be permitted to become stale or to putrefy before being applied to the soil. It is a very valuable manure for almost all kinds of garden produce and fruit-trees; and, when diluted with three or four times its bulk of water, may be employed in the fluid state. It may also be mixed up as a compost with soil and vegetable refuse. The mass should be allowed to ferment for some time, and may then be applied like ordinary farm-yard manure. Owing to its very strong and unpleasant smell when stale, Urine should not be freely used close to houses. Instead of being allowed to run to waste, as it so often is, arrangements should be made for collecting the farm-yard Urine into a tank, and for storing it up for use as described above.

URN FLOWER, DROOPING. *See* **Urceolina pendula.**

UROCYSTIS (from *oura*, a tail or stalk, and *kystis*, a vessel or bladder; in allusion to the stalked, vesicular spores). This is one of the genera included in the group of Fungi known to botanists as the *Ustilaginei*, and in popular language as Smuts, from their loose, dark spores giving a dirty appearance to the plants in which they grow. The Fungi in this genus are parasites; they grow for a while inclosed in the tissues of living plants; then, when the spores ripen, they form dark swellings, whose growth bursts the outer tissues of the host-plant, and discloses the powdery mass of spores. The parts in which these are formed are usually much swollen and distorted. The spores of *Urocystis* vary a good deal in size and form, but usually consist of a layer of rather small cells, surrounding a larger central cell, which is the one actively concerned in the development of new mycelium when the spore is kept in a warm, moist atmosphere. The spores are fixed on the tips of branches till ripe, when they fall from the stalks. The species of *Urocystis* are hurtful to cultivated plants, and the following occur in Britain: *U. Violæ* grows in petioles and other organs of the Sweet Violet (*Viola odorata*); *U. Anemones* is very common on various kinds of *Anemone*, and on allied plants; and *U. sorosporioides* occurs on leaves and flowers of *Thalictrum.*

For remedies, *see* **Ustilago.**

UROPEDIUM. Included under **Selenipedium** (which *see*).

UROPETALUM. A synonym of **Dipcadi** (which *see*).

UROSKINNERA (named after G. Ure Skinner, a merchant and collector of Central American plants). ORD. *Scrophularineæ.* A genus consisting of a couple of species of softly villous, stove herbs, natives of Central America and Mexico. Flowers rosy-violet, rather large, declinate, shortly pedicellate, with two bristly bracts at base; calyx tubular-campanulate, with four or five short, bristly teeth; corolla tube elongated, enlarged above, the limb of five scarcely unequal, spreading lobes; stamens four, included; style elongated, very shortly bifid; spike or raceme terminal, dense, secund. Leaves opposite, petiolate, soft, crenate. *S. spectabilis*, the only species introduced, thrives in sandy loam. It may be increased by cuttings, inserted in sand, under a bell glass, in heat.

U. spectabilis (showy). *fl.* in sessile, terminal, very close spikes about 3in. long; calyx small, hairy, four-toothed; corolla smooth, 1½in. long, funnel-shaped. July. *l.* oblong, toothed, 2in. to 4in. long. *h.* 1ft. to 1½ft. Mexico, 1856. Plant grey with close hairs. (B. M. 5009; F. d. S. 1433.)

UROSPATHA (from *oura*, a tail, and *spatha*, a spathe; referring to the long-pointed spathe in most of the species). ORD. *Aroideæ* (*Araceæ*). A genus comprising about ten species of stove, marsh-loving herbs, with thick rhizomes, natives of tropical America. Flowers hermaphrodite, the lower ones sterile; spathe erect, closed at base, at length opening, long-narrowed above, straight, decurved, or twisted, persistent; spadix sessile or nearly so, inappendiculate, much shorter than the spathe; perianth segments and stamens four to six; peduncle elongated. Leaves few, hastate-sagittate, with diverging nerves or nearly parallel ribs; petioles elongated, sheathing at base. The two introduced species thrive in light, loamy soil, and require an abundance of water when growing. They may be propagated by division of the rootstock.

U. desciscens (degenerate). *fl.*, spathe brown and claret-coloured, convolute below, gaping above, long-acuminate, incurved or arcuate; spadix sessile, cylindroid, obtuse, shorter than the spathe tube; peduncle equalling the petioles. *l.* broadly lobed, the anterior one triangular, acuminate, the posterior rather longer, oblong, acuminate, very inequilateral; petioles smooth, nearly twice the length of the blades. *h.* 3ft. Brazil, 1860.

U. sagittifolia (sagittate-leaved). *fl.*, spathe yellowish-green or deep green, mottled or blotched with grey or rosy-red, lanceolate, long-acuminate; spadix green, cylindrical, a quarter to one-fifth the length of the spathe. *l.* broadly lobed, hastate-sagittate, the anterior lobe lanceolate-triangular, acuminate; basal lobes rather longer, oblong-lanceolate; petioles slightly scabrous or scabrid, warted. Para, 1866. "*U. elegans*, *U. grandis*, *U. picturata*, *U. spectabilis*, and *U. splendens*, all from Para, are garden names for what are probably varieties of this species" (N. E. Brown).

UROSPERMUM (from *ouros*, a tail, and *spermum*, a seed; alluding to the beaked achenes). Sheep's Beard. SYN. *Arnopogon.* ORD. *Compositæ.* A small genus (two species) of hardy, annual or biennial, slightly-branched herbs, natives of the Mediterranean region. Flower-heads yellow, long-pedunculate at the tips of the branches; involucre campanulate, with seven or eight bracts in one series, spiny outside; receptacle conical, naked; ray florets ligulate, truncately five-toothed at apex; achenes beaked. Leaves radical or alternate, deeply toothed or lyrate-pinnatifid; cauline ones amplexicaul. Only one species calls for mention here. It is a biennial, of easy culture in common soil.

U. Dalechampii (Dalechamp's). *fl.-heads* on naked peduncles; involucre velvety-pubescent. June. *l.* variously runcinate, toothed. *h.* 1½ft. South Europe, 1739. SYN. *Arnopogon Dalechampii* (B. M. 1623; S. F. G. 780).

URSINIA (named after John Ursinus, of Regensburg, 1608-1666, who wrote an "Arboretum Biblicum"). Including *Sphenogyne.* ORD. *Compositæ.* A genus comprising fifty-four species of greenhouse or half-hardy, annual or perennial herbs or shrubs, natives of South Africa, one also extending to Abyssinia. Flower-heads solitary or loosely paniculate, heterogamous; involucre

Ursinia—*continued.*

hemispherical or broadly campanulate, with several series of imbricated bracts; receptacle paleaceous; ray florets wholly yellow or purplish outside; disk yellow; achenes glabrous or pubescent. Leaves alternate, serrated, pinnatifid, or often pinnately dissected. A selection of the best-known species is here given. They are very elegant plants, and succeed in a compost of loam and peat. *U. anthemoides* and *U. pulchra* may be increased by seeds. The rest are greenhouse shrubs, cuttings of which will root readily in sand, under a glass.

U. abrotanifolia (Southernwood-leaved). *fl.-heads* solitary on tomentose peduncles 6in. to 10in. long; ray florets wholly yellow. July. *l.* bi-tripinnatisect, 1½in. to 2in. long; segments narrow-linear, divergent, acute, the lowest short and nearly simple. Branches erect, curved, leafy, clothed with pale, woolly hairs. *h.* 1ft. to 2ft. 1789. SYN. *Sphenogyne abrotanifolia.*

U. anthemoides (Chamomile-like). *fl.-heads* on long, naked, drooping peduncles; ray florets purplish outside. August. *l.* either pinnatipartite or sub-pinnatipartite; lobes linear-filiform, acute or mucronate, the lower shorter or very small, the upper trifid or spinulose, spreading. *h.* 3in. to 12in. 1774 Half-hardy annual. SYNS. *Arctotis anthemoides* (B. M. 544), *Sphenogyne anthemoides.*

U. crithmifolia (Samphire-leaved).* *fl.-heads* 1in. to 1½in. in diameter, on peduncles 3in. to 10in. long; ray florets wholly bright yellow. July. *l.* pinnatipartite or trifid, 1½in. to 2in. long; lobes linear-filiform, semi-terete, acute, the lower ones short or obsolete, the rest elongated. *h.* 1ft. to 2ft. 1768. Erect and densely leafy. SYN. *Sphenogyne crithmifolia* (B. M. 3042).

U. dentata (toothed). *fl.-heads* rather small; ray florets coppery beneath; peduncles 6in. to 9in. long, one-headed. June. *l.* pinnatipartite, ½in. to ¾in. long; lobes short, entire or trifid, the teeth tipped with a bristle. Branches curved, closely leafy. *h.* 1ft. to 2ft. 1787. SYN. *Sphenogyne dentata.*

U. pilifera (bristle-bearing). *fl.-heads* on long, sub-hispid pedicels; ray florets purplish outside. December. *l.* pinnatisect, fleshy, spreading, shortly hispid; lobes linear, tipped with a bristle. 1821. Shrub diffuse. SYN. *Sphenogyne pilifera* (B. R. 604).

U. pulchra (pretty).* *fl.-heads* bright orange; ray florets somewhat lanceolate, bitten at the extremities. June and July. *l.* twice pinnate, sessile; leaflets linear, acute, somewhat recurved. Stems roundish, slightly declinate at the base, ascending, branched, smooth. *h.* 1ft. Native place unknown. 1836. Hardy annual. SYN. *Sphenogyne speciosa* (P. M. B. vi., p. 77).

URTICA (the old Latin name used by Horace and Pliny, from *uro*, to burn; referring to the stinging properties of most species). Nettle. ORD. *Urticaceæ.* A genus comprising about thirty species of greenhouse or hardy, annual or perennial herbs, rarely shrubby at base, armed with stinging hairs; they are broadly dispersed over temperate and sub-temperate regions. Flowers monœcious or diœcious; clusters cymulose, spicate, racemose, or paniculate; inflorescence unisexual or androgynous. Leaves opposite, petiolate, toothed or incised-lobed. The British Flora includes *U. dioica* (the young leaves of which are a good pot-herb), *U. pilulifera* (the most virulent native Nettle), and *U. urens*. The stinging effects of *U. urentissima* (Devil's Leaf), a native of Timor, are said to be so violent as to last for twelve months, and sometimes to cause death. Many species produce excellent fibre, and several are considered to possess medicinal properties. None are of any horticultural value.

U. involucrata (involucred). A synonym of *Pilea pubescens.*

U. reticulata (reticulated). A synonym of *Pilea reticulata.*

URTICACEÆ. A natural order of trees, shrubs, or herbs, broadly dispersed over the temperate and warmer regions of the globe. Flowers unisexual or rarely polygamous, regular or by reduction irregular; perianth simple, calycine; stamens of the male flowers as many as the perianth segments, very rarely fewer or rather more, the anthers ovate or oblong; staminodes of the females rare, the ovary superior, or in a few genera more or less inferior; primary inflorescence centripetal, axillary or at the nodes, never terminal; ultimate inflorescence normally centrifugal, cymulose; bracts often small or wanting; bracteoles minute or wanting, sometimes conspicuous. Fruit indehiscent, one-seeded. Leaves alternate or rarely opposite, entire, toothed, lobed, or palmately parted, not pinnate, very rarely pinnatifid. Among the more important members of this order the following may be enumerated: Breadfruit-tree (*Artocarpus incisa*), Elm (*Ulmus*), Fig (*Ficus Carica*), Hemp (*Cannabis sativa*), Hop (*Humulus Lupulus*), Indiarubber-plant (*Ficus elastica*), Mulberry (*Morus alba* and *M. nigra*). Several of the species are valuable timber trees. The order is divided into eight tribes: *Artocarpeæ*, *Cannabineæ*, *Celtideæ*, *Conocephaleæ*, *Moreæ*, *Thelygoneæ*, *Ulmeæ*, and *Urticeæ.* It embraces nearly 110 genera and 1500 species. Examples: *Artocarpus*, *Cannabis*, *Ficus*, *Humulus*, *Morus*, *Ulmus*, *Urtica.*

URVILLEA (named after Capt. Dumont D'Urville, of the French navy, an acute botanist, who was sent out to ascertain the fate of La Peyrouse). ORD. *Sapindaceæ.* A genus comprising about half a score species of climbing or twining, stove shrubs, inhabiting tropical America. Flowers whitish, in axillary racemes; peduncles bearing two tendrils at the apex. Leaves alternate, stipulate; leaflets entire or deeply toothed, sometimes pellucid-dotted. One or two species have been introduced, but they are unworthy of cultivation. *U. ferruginea* is now and then met with in botanic gardens, and is interesting on account of the peculiar structure of its triquetrous stems.

USTERIA (of Cavanilles). Included under **Maurandya** (which *see*).

USTILAGINEI (named from *Ustilago*, the largest genus in the group). This is the scientific name of the Fungi included under the popular name of **Smut**, under which name is given a short account of them, and of the characters by which the more important genera are distinguished from one another. The mycelium seems to enter, usually, into seedling plants, and to make its way among the cells of all parts; but while the reproductive organs (spores) of some species may be formed in masses in almost any part of the host-plant, those of certain others are produced only in the reproductive organs (stamens or ovaries), or in the leaves. Several examples are mentioned under **Smut.** *See also* **Ustilago.**

USTILAGO (from *ustus*, burnt; in allusion to the scorched appearance of the organs of the host-plants in which the spores are developed). A genus of Fungi, belonging to the group *Ustilaginei* (*see* **Smut**). It is distinguished from the other genera in the group by the spores, each being a single, isolated, roundish or angular cell, which germinates by a mycelium filament pushed out at one side. The spores are usually brown, dark purple, or nearly black, when in mass. *Ustilago* may be regarded as nearly typical of the *Ustilaginei.* About forty European species are known; many of these occur in the British Islands. A number of them live in the leaves or flowers of Grasses; *e.g.*, *U. longissima* forms black streaks in leaves of *Glyceria fluitans* and other swamp-loving Grasses; *U. hypodytes* grows below the leaf-sheaths of several Grasses, including among others the ornamental species, *Stipa pennata* and *S. capillaris*; *U. segetum* (see Fig. 145) destroys the ovaries of Oats, Barley, and many other Grasses; *U. Caricis* (*U. urceolorum*) is very common on many of the species of *Carex*, infesting the ovaries, and reducing them to the state of balls of sooty-looking powder; *U. utriculosa* and some allied forms destroy the ovaries of various kinds of *Polygonum*; *U. violacea* (*U. antherarum*) is exceedingly common in the flowers of *Lychnis*, *Silene*, *Stellaria graminea*, and other caryophyllaceous plants, filling the stamens with its reddish-violet spores, and thus destroying the flowers; *U. flosculorum* acts similarly in the flowers of *Scabiosa arvensis*, *S. Columbaria*, and *S. succisa*; *U. Tragopogi-pratensis* (*U. receptaculorum*) destroys all the florets in the heads of *Tragopogon pratensis* and *T. porri-*

Ustilago—*continued.*

folius, replacing them by a mass of sooty spores. In addition to the above, which are all British species, may be mentioned: *U. Ornithogali*, which, in Germany, forms swellings, about ⅛in. long, in the leaves of species of *Ornithogalum* and *Gagea*; and *U. Tulipæ*, which forms similar swellings on Tulips. When the spores are ripe, the epiderm above the swellings bursts, and exposes the brown spores to view.

FIG. 145. USTILAGO SEGETUM ON BARLEY, showing (A) Diseased Inflorescence, natural size, and (B) Diseased Spikelet, enlarged.

Treatment. Plants attacked by these Fungi cannot be freed from them, as the mycelium is in the tissues; but frequently only some of the stems on a plant show their presence, and the other parts seem healthy. Such parts as do show the Fungi should be removed and burned, before the spores ripen, in order to prevent their dispersion. To check the ravages of *U. segetum*, the Smut of corn, the seed, before sowing, is sometimes sprinkled with stale urine, and then raked in quicklime till it becomes white; or it is steeped in a solution of one pound of sulphate of copper in five quarts of water, this quantity of solution being sufficient for four bushels of wheat. The object aimed at is to kill any spores of the Fungi adhering to the seeds, without destroying the vitality of the latter; and the above methods are found

Ustilago—*continued.*

to give good results. Perhaps they might prove successful with garden seeds also, and might be employed with advantage against *Urocystis* and the other genera of *Ustilaginei*.

UTANIA. A synonym of **Fagræa** (which *see*).

UTRICLE. A small, bladdery pericarp; any thin, bottle-like body.

UTRICULAR, UTRICULATE, UTRICULIFORM, UTRICULOSE. Having, or consisting of, utricles; bladder-like.

UTRICULARIA (from *utriculus*, a little bottle; alluding to the minute, pitcher-like bodies developed on the leaves and roots). Bladderwort; Hooded Water Milfoil. ORD. *Lentibularieæ*. A large genus (nearly 150 species) of cosmopolitan, stove, greenhouse, or hardy, floating, epiphytal (*e.g.*, *montana*), or terrestrial herbs. Calyx two-parted or deeply two-lobed; corolla spur often incurved; upper lip erect, entire, emarginate, or bifid; lower one often large and spreading, three to six-lobed; scape simple or slightly branched, one-flowered or bearing a many-flowered raceme. Leaves of the floating species many-partite, with capillary segments, furnished with minute pitchers, which entrap animalcules; those of the erect species entire. *U. intermedia*, *U. minor*, *U. neglecta*, and *U. vulgaris*, are worthy of being grown as curiosities. The first thrives in shallow pans of water in which sphagnum has been established, and the other three in deeper vessels; towards winter, all four form compact, round winter buds—at the ends of the branches—which fall to the bottom of the water and remain there until the following spring. *U. Endresii* and *U. montana* do best in baskets of fibry peat and sphagnum, suspended near the glass. *U. Humboldtii* and *U. reniformis* will grow in large pots of peat and sphagnum, partially plunged in water. *U. bifida* thrives in a pot of ordinary soil, placed a few inches below the surface of a warm tank.

U. bifida (bifid).* *fl.*, corolla bright yellow, with a very large and prominent, hemispheric, orange-yellow palate, the upper lip reflexed, the lower very short and two-lobed; scapes numerous, erect, two to five times as long as the leaves. September. *l.* erect, 1in. to 2in. long, filiform or slightly thickened upwards, bright green. Hong Kong, 1882. Plant densely tufted. Greenhouse. (B. M. 6689.)

U. Endresii (Endres').* *fl.* drooping, on very slender pedicels; sepals pale greenish or reddish, ½in. to ¾in. long; corolla pale lilac, with a yellow palate, 1¼in. to 2in. in diameter, beautifully ciliolate all round; scape twice as long as the leaves, erect, about five-flowered. Spring. *l.* solitary, 1in. to 3in. long, narrowly elliptic-lanceolate, narrowed into stiff petioles of the same length. Rhizomes slender, creeping, bearing ovoid tubercles ¼in. long. Costa Rica, 1874. Greenhouse. (B. M. 6656). SYN. *U. montana rosea* (of gardens).

U. Humboldtii (Humboldt's).* *fl.* bluish-purple, large, terminal, racemose, on short pedicels; sepals dark fuscous, leafy, convex, ovate, acute; upper lip of the corolla small, entire, slightly inflexed at apex, the lower one dilated, truncate, yellow and excavated at base; spur subulate, ascending-decurved; scape very long, glabrous, sparsely bracteate. *l.* usually solitary, obcordate, attenuated into a long petiole. Root fibrous. Guiana, 1886. Stove. (F. d. S. 1390.)

U. intermedia (intermediate). *fl.* pale yellow; upper lip of the corolla far exceeding the palate; scape rather stout, three or four-flowered. July to September. *l.* distichous, closely set, ¼in. to ½in. broad, orbicular, dichotomously multifid; segments subulate, distinctly ciliated; pitchers on leafless branches, ⅛in. to ¼in. long. Stems slender, 4in. to 8in. long. Europe, &c. (Sy. En. B. 1127.)

U. minor (lesser). *fl.* pale yellow; corolla ¼in. long, with a minute, obtuse spur; scapes 2in. to 6in. long, bearing two to six flowers. June to September. *l.* lax, ⅛in. to ¼in. broad, orbicular, dichotomously multifid; segments subulate, quite entire; pitchers on the leaf axils, one line long. Stems capillary, 3in. to 10in. long. Europe, &c. (Sy. En. B. 1126.)

U. montana (mountain-loving).* *fl.* one to four, 1½in. in diameter; calyx lobes pale green, ovate-cordate, obtuse; corolla white, with a yellow palate and disk to the lower lip; upper lip with recurved edges, the lower one twice as large; spur a stout, incurved horn; scape much longer than the leaves, erect. July. *l.* 4in. to 6in. long, erect, elliptic-lanceolate, narrowed into slender

Utricularia—*continued.*

petioles. Roots of ovoid, stalked, hollow, green tubers, ⅛in. to ½in. long. West Indies, 1871. Stove epiphyte. (B. M. 5923; F. d. S. 1942; F. M. n. s. 83; G. C. 1871, 1039; I. H. n. s. 64.)

U. m. rosea (pink). A garden synonym of *U. Endresii.*

U. neglecta (neglected). *fl.* pale yellow; upper lip of corolla exceeding the palate; scape very slender. June to August. *l.* smaller than those of *U. vulgaris*, rather remote, nearly orbicular; segments entire. Stems capillary, 6in. to 8in. long. Europe (Britain). (Sy. En. B. 1125 *bis.*)

U. reniformis (kidney-shaped). *fl.* rose-coloured, with two darker-coloured lines, 1in. to 1½in. across; scape 1½ft. to 2ft. long, many-flowered. *l.* reniform, sometimes 3in. across; petioles 6in. to 12in. long. Brazil, &c., 1886. A gigantic species.

U. vulgaris (common). *fl.* yellow; corolla ¼in. to ⅜in. long, with a conical spur; scape 4in. to 8in. long, two to eight-flowered. July and August. *l.* spreading, ⅜in. to 1in. long, broadly ovate, pinnately multifid; segments remotely toothed; pitchers at the bases of and upon the leaf segments, ⅛in. to ¼in. long, shortly stalked. Stems 6in. to 18in. long, leafy. Europe (Britain), &c. (Sy. En. B. 1125.)

UTRICULARIEÆ. Included under *Lentibularieæ.*

UVARIA (from *uva*, a cluster of grapes; alluding to the fruits of some of the species). ORD. *Anonaceæ.* A genus embracing about thirty-five species of stove, climbing or sarmentose shrubs or under-shrubs, found in tropical Africa and Asia. Flowers yellow, purple, or brown, hermaphrodite, terminal or leaf-opposed, rarely axillary; sepals three, often connate below, broad, valvate; petals six, imbricated in two rows, sometimes connate at base; stamens indefinite. Leaves alternate, entire, exstipulate. Several species formerly included here are now referred to other genera. *U. Kirkii* is a medium-sized under-shrub, and *U. zeylanica* a large, woody climber. Both thrive in a compost of sandy loam and peat. Cuttings of the ripened wood will root in sand, under a glass, in heat.

U. Kirkii (Kirk's). *fl.* 3in. in diameter, solitary, axillary and sub-terminal; petals pale, dirty straw-colour, suffused with verdigris-green. October. *l.* 1½in. to 5in. long, the young ones elliptic-oblong, and very rusty beneath, the old ones oblong, obtuse or acute, glabrous beneath or with scattered hairs on the midrib; petioles very short. Branchlets ferruginously hairy. *h.* 3ft. to 4ft. Zanzibar, 1868. (B. M. 6006.)

U. zeylanica (Cingalese). *fl.* dull red, solitary or twin, 1in. in diameter; peduncles ½in. long, tomentose. May. *l.* lanceolate or oblong-lanceolate, acute or acuminate, 2½in. to 3½in. long, dark shining green on the upper side, red or pale beneath. *h.* 20ft. Ceylon, &c., 1794.

UVULARIA (from *uvula*, a diminutive of *uva*, a grape, or bunch of grapes; in allusion to the form of the fruit). Bellwort. Including *Oakesia* (of Watson). ORD. *Liliaceæ.* A small genus (four or five species) of hardy, bulbous plants, natives of North America. Flowers solitary or twin at the tips of the branchlets, on rather long, pendulous pedicels; perianth usually pale yellow, campanulate, deciduous, the segments distinct, erect, or spreading above, the outer ones foveolate within at the base; stamens six. Leaves alternate, sessile or perfoliate, ovate or lanceolate. The species thrive in a light, sandy soil, and may be increased by divisions. All flower in spring.

U. flava (yellow). A variety of *U. perfoliata.*

U. grandiflora (large-flowered).* *fl.* one to three, on pedicels ½in. to ⅞in. long; perianth 1⅛in. to 1⅜in. long, the segments lanceolate, acute, three to four lines broad; anthers six to eight lines long. *l.* oblong, membranous, perfoliate, glabrous, 2in. to 4in. long. 1802. Habit that of *U. perfoliata*, but rather more robust. (B. M. 1112; S. E. B. i. 51.)

U. lanceolata (lanceolate-leaved). A form of *U. perfoliata.*

U. perfoliata (perfoliate). *fl.* one or few, drooping, terminal; perianth ⅞in. to 1⅛in. long, the segments lanceolate, acute, papillose within. *l.* six to twelve, perfoliate, oblong, sub-acute, membranous, 1½in. to 3in. long, green above, paler beneath. Stems forked above. *h.* nearly 1ft. 1710. (B. M. 955; S. E. B. i. 49.) *U. flava* (S. E. B. i. 50) is a variety with larger and deeper-coloured flowers. *U. lanceolata* is merely a narrow-leaved form.

U. puberula (puberulous). *fl* few, terminal or axillary, on pedicels ½in. to ⅞in. long; perianth nearly 1in. long. *l.* six to

Uvularia—*continued.*

fifteen, oblong, sessile, 1½in. to 2in. long, acute or cuspidate, firmer than in the other species, green on both sides, the margins ciliated. Stem nearly 1ft. high, with two to four branches. 1824. (S. B. F. G. ser. ii. 21.)

U. rosea (rosy). A synonym of *Streptopus roseus.*

U. sessilifolia (sessile-leaved).* *fl.* one to three, axillary or terminal, on pedicels ½in. to ¾in. long; perianth ⅝in. to 1in. long, the segments lanceolate. *l.* six to fifteen, oblong, sessile, membranous, acute, 1½in. to 3in. long, narrowed at base, slightly glaucous below. Stem glabrous, nearly or quite 1ft. high; branches two to four. 1790. (B. M. 1402; L. B C. 1262; S. E. B. i. 52.)

VACCARIA. Included under **Saponaria** (which *see*).

VACCINIACEÆ. A natural order of erect or prostrate shrubs or small trees, often epiphytal, usually inhabiting North temperate regions, but many are South American and Indian; they also occur in Asia, Africa, Madagascar, and Australia. Flowers hermaphrodite, variously disposed; calyx tube adnate to the ovary, the limb five, rarely four to seven, parted; corolla gamopetalous, globose, campanulate, tubular, or inflated, five, rarely four to seven, lobed, or very rarely four or five-parted, the lobes imbricated, rarely valvate; stamens twice as many as, or rarely equalling in number, the corolla lobes, epigynous or adhering towards the base of the corolla; filaments free or connate; anthers two-celled. Fruit baccate, rarely drupaceous, or dry, often very fleshy. Leaves alternate or scattered, occasionally distichous, sessile or petiolate, usually evergreen, entire, crenated, or serrated, the teeth sometimes glanduliferous. The berries of *Vaccinium* and *Oxycoccus* are acid, sweet, and slightly astringent; preserves are made of them, and in some countries they are used as anti-scorbutics. The order embraces twenty-six genera, and about 320 species. Examples: *Cavendishia, Psammisia, Themistoclesia, Thibaudia,* and *Vaccinium.*

VACCINIUM (the old Latin name, used by Virgil and Pliny). Bilberry; Blueberry; Cranberry; Huckleberry. Including *Epigynium* (in part). ORD. *Vacciniaceæ.* A large genus (about 100 species) of mostly hardy, branched shrubs, rarely trees, very rarely epiphytal, inhabiting North temperate regions and tropical mountains. Flowers white, pink, or red, disposed in axillary or terminal racemes or axillary fascicles, rarely solitary, often bracteate and bibracteolate; calyx tube terete, globose, hemispherical, or turbinate, the limb of four or five short, very rarely unequal lobes; corolla urceolate, campanulate, or rarely nearly tubular or conical, terete, very rarely ribbed or angled, the limb of four or five short, rarely elongated and revolute lobes or teeth; stamens eight or ten, free, or shortly adhering at the base of the corolla tube; filaments short or elongated, often hairy; anthers awned on the back or awnless; bracts sometimes foliaceous. Berry globose, four or five (or apparently eight or ten) celled, the cells few or many-seeded. Leaves persistent, rarely membranous or deciduous, often thickly coriaceous, entire or serrated. All the Vacciniums require peat; the hardy ones thriving in any fairly damp, peat border. They may be propagated most readily from seeds, sown under glass, in spring, and the seedlings gradually hardened off when large enough. The greenhouse species should be placed in the open air during the summer months, in order to get their wood well ripened. The best-known species are here described. Except where otherwise indicated, they are hardy, deciduous shrubs, from North America; the flowers appear in spring, and the berries, which are sweetish or sometimes acid, and mostly edible, ripen in summer or autumn.

V. albiflorum (white-flowered). A synonym of *V. corymbosum pallidum.*

V. amœnum (pleasing). A variety of *V. corymbosum.*

Vaccinium—*continued.*

V. angustifolium (narrow-leaved). A form of *V. pennsylvanicum.*

V. arboreum (tree-like). Farkleberry. *fl.* profuse, axillary along the branches and leafy-racemose; corolla white, moderately five-lobed. *fr.* black, small, globose. *l.* obovate or round-oval to oblong, thinnish-coriaceous, very smooth and shining above, reticulate-veined, obscurely glandular-denticulate or entire. Branches spreading, glabrous or somewhat pubescent. *h.* 6ft. to 25ft. 1765. (L. B. C. 1885.) SYN. *V. diffusum* (B. M. 1607)

V. Arctostaphylos (Arctostaphylos). A synonym of *V. maderense.*

Vaccinium—*continued.*

V. caracasanum (Caraccas).* *fl.* secund, with eight to ten anthers; corolla reddish-white, campanulate; racemes axillary, twice as long as the leaves; bracts lanceolate, nearly equalling the pedicels. July. *l.* elliptic, acute, crenulate, coriaceous, glabrous, shining above. Stem shrubby, erect. *h.* 4ft. Caraccas, 1825. Greenhouse.

V. corymbosum (corymbose).* *fl.* more often racemosely than corymbosely disposed on the naked twigs; corolla white or obscurely rose-coloured, turgid-ovate to cylindraceous-campanulate, three to four lines long. *fr.* usually blue-black, with a copious bloom. *l.* ovate or oblong to elliptic-lanceolate. Branchlets yellowish-green, turning brownish. *h.* 5ft. to 10ft. 1765.

FIG. 146. FRUITING BRANCH OF VACCINIUM LEUCOBOTRYS.

V. cæspitosum (tufted). *fl.* solitary in the earliest axils, usually five-parted; corolla rose-coloured or nearly white, ovate or ovoid-oblong. *fr.* blue, with a bloom, proportionately large, sweet. *l.* obovate to cuneate-oblong, obtuse or rarely somewhat acute, thickly serrulated, bright green on both sides, reticulate-veined. *h.* 3in. to 6in. 1823. (B. M. 3429; H. F. B. A. ii. 126.)

V. canadense (Canadian). *fl.* few in the clusters; corolla greenish-white, shorter, and more open-campanulate. *l.* elliptic or oblong-lanceolate, entire, and, as well as the branchlets, downy with soft, spreading pubescence. Otherwise resembling *V. pennsylvanicum.* 1825. (B. M. 3446.)

V. c. amœnum (pleasing). *l.* ciliate-serrulated or bristly-ciliated, rather bright green, slightly or sparsely pubescent. SYNS. *V. amœnum* (A. B. R. 138; B. R. 400), ? *V. c. fuscatum* (B. M. 3433).

V. c. pallidum (pale). A pale and very glaucous or glaucescent form, with or without some pubescence, generally low; otherwise nearly as in the preceding variety. SYN. *V. albiflorum* (B. M. 3428).

V. crassifolium (thick-leaved). *fl.* few and almost sessile, in small, axillary clusters; corolla nearly white, globose, campanulate. *fr.* black. *l.* ¼in. to ½in. long, oval to narrow-oblong,

Vaccinium—*continued.*

sparsely mucronate-serrulate or entire, shining. Stems slender, trailing, 2ft. to 3ft. long. 1787. Evergreen. (A. B. R. 105; B. M. 1152.)

V. diffusum (diffuse). A synonym of *V. arboreum.*

V. dumosum (bushy). A synonym of *Gaylussacia dumosa.*

V. erythrinum (red-twigged).* *fl.* numerous, moderately large, secund, drooping; corolla deep coral-red, urceolate, the limb of five small, reflexed segments; pedicels red; racemes clustered, terminal, 2½in. to 3in. long, sessile or nearly so. October. *l.* alternate, coriaceous, glossy, 1¾in. to 2in. long, ovate, rather obtuse, quite entire; young ones stained with red. Young branches red. *h.* 1½ft. Java, 1852. A handsome, warm greenhouse, evergreen shrub. (B. M. 4688; F. d. S. 1115; L. J. F. iv. 364.)

V. formosum (beautiful).* *fl.* in loose clusters; calyx and tardily deciduous bracts red or reddish; corolla rose-red, four to five lines long, cylindrical. *fr.* blue, sweet. *l.* ovate or oblong, entire, 1in. to 2in. long, smooth and bright green above, glabrous or pubescent beneath, rather firm in texture. *h.* 2ft. to 3ft. (A. B. R. 97.)

V. frondosum (leafy). A synonym of *Gaylussacia frondosa.*

V. fuscatum (fuscous). A form of *V. virgatum.*

V. Imrayi (Dr. Imray's). *fl.* large; corolla yellow-green, rather thick; corymbs many-flowered, axillary or terminal, leafy, compact. *l.* shortly petiolate, ovate, acuminate, entire or obsoletely serrated, penninerved, glossy, coriaceous. *h.* 2½ft. to 3ft. Dominica, 1860. A handsome, stove, evergreen shrub. (B. M. 5279.) The correct name of this plant is now *Hornemannia martinicensis.*

V. leucobotrys (white-clustered).* *fl.* glabrous; corolla white, waxy, sub-diaphanous, conico-urceolate; racemes copious from among the leaves, and longer than them, drooping, secund, many-flowered. Summer. *fr.* pure white, with five dark spots in a circle below the apex, copious, about the size of peas. *l.* oblong-lanceolate, deeply serrated, very shortly petiolate. Branches whorled. *h.* 4ft. to 7ft. Bengal, 1859. Greenhouse, evergreen shrub. See Fig. 146. (B. M. 5103, under name of *Epigynium leucobotrys.*)

V. leucostomum (white-mouthed). *fl.* three or four in a short, erect, fascicled raceme; corolla scarlet, tipped with white, urceolate-campanulate, with a short limb; bracts small, subulate. *l.* oblong, nearly sessile, thick, slightly crenate, obsoletely nerved, ½in. to 1in. long. Branches erect, angled. Peruvian Andes, 1848. A glabrous, evergreen shrub. (G. C. 1848, p. 7.)

V. macrocarpum (large-fruited). A synonym of *Oxycoccus macrocarpus.*

V. maderense (Madeira). *fl.* on axillary, drooping pedicels; corolla greenish-white, campanulate, sub-cylindrical; racemes leafy. *l.* oblong, attenuated at both ends, serrulated, pubescent beneath. Stem arborescent. *h.* 6ft. Madeira, 1777. SYN. *V. Arctostaphylos* (A. B. R. 30; B. M. 974).

V. Mortinia (native name).* *fl.* in very short, drooping racemes, crowded, shortly pedicellate; corolla rose-pink, ⅓in. long, with five small, recurved teeth. *l.* rather crowded, ½in. to ¾in. long, spreading and reflexed, ovate- or lanceolate-oblong or ovate, acute, thickly coriaceous, slightly serrated; petioles very short. Branches pubescent or nearly glabrous. *h.* 2ft. to 3ft. Andes, 1884. Half-hardy shrub. (B. M. 6872.)

V. Myrsinites (Myrsinites). *fl.* in fascicles or very short racemes, shortly pedicellate; corolla white or rose-coloured, five-toothed, at length cylindraceous, two to three lines long; bracts reddish, tardily deciduous. *fr.* blue, globose. *l.* obovate and obtuse to oblong-lanceolate and acute or spathulate, often cuspidate, ⅛in. to 1in. long, sometimes denticulate, mostly shining above, dull or paler and sometimes glaucous beneath. Branchlets puberulent when young. *h.* 9in. to 2ft. 1794. Evergreen. (? B. M. 1550, under name of *V. nitidum decumbens.*) SYN. *V. Sprengelii* (of gardens).

V. myrtilloides (Myrtillus-like). *fl.* solitary in the earliest axils, usually five-parted; corolla yellowish- or greenish-white, tinged with purple, globose-urceolate, nearly two lines long. *fr.* purplish-black, rather acid. *l.* ovate or oval and oblong, sharply serrulated, membranous, green on both sides but not shining, 1in. or more long, the larger or later ones mostly acute or acuminate. Branchlets slightly angled. *h.* 1ft. to 5ft. (B. M. 3447.)

V. Myrtillus (Myrtillus). Bilberry; Bleaberry; Blueberry; Common Whortleberry, &c. *fl.* solitary, on naked peduncles, ⅓in. long; corolla rosy, tinged with green, globose, ⅛in. in diameter. *fr.* dark blue, ⅓in. in diameter, glaucous. *l.* ovate, ½in. to 1in. long, serrated, reticulate-nerved, rosy when young. Stems many, erect, 6in. to 2ft. high. Europe (Britain), Asia, and America. (F. D. 974; Sy. En. B. 879.)

V. nitidum (shining). *fl.* in fascicles or very short racemes; calyx teeth and almost persistent bracts very obtuse; corolla rose-red or turning white, rather broad, two lines long. *fr.* black, somewhat pear-shaped. *l.* obovate to oblanceolate-oblong, ⅛in. to ½in. long, thick-coriaceous, shining, at least above, obscurely denticulate and glandular. *h.* 1ft. to 2ft. 1794. A diffuse, much-branched, very leafy, evergreen shrub. (A. B. R. 480.)

Vaccinium—*continued.*

V. ovatum (ovate-leaved). *fl.* in short and close, axillary clusters; corolla rose or flesh-coloured, campanulate, two lines long, five-parted. *fr.* reddish, turning black, small, rather sweet. *l.* thick and firm, very numerous, oblong-ovate to oblong-lanceolate, acute, minutely and acutely serrated, glabrous or nearly so, 1in. or so long, bright green on both sides. Branchlets pubescent. *h.* 3ft. to 5ft. 1826. An erect, rigid, evergreen shrub. (B. R. 1354; L. B. C. 1605; L. J. F. iv. 424.)

V. Oxycoccus (Oxycoccus). A synonym of *Oxycoccus palustris.*

V. pennsylvanicum (Pennsylvanian).* *fl.* on very short pedicels, in fascicles or short racemes; corolla white or obscurely rose-coloured, campanulate with the orifice slightly contracted, barely ⅛in. long. *fr.* bluish-black and glaucous, large and sweet, ripening early. *l.* oblong-lanceolate or oblong, green and somewhat shining on both sides, glabrous or sometimes hairy on the midrib beneath, distinctly serrulated with bristle-pointed teeth. Stems green and warty, mostly glabrous. *h.* 9in. to 12in. or more. 1772. (B. M. 3434.)

V. p. angustifolium (narrow-leaved). Bluets. A dwarf form (9in. or less in height), with lanceolate leaves. SYN. *V. angustifolium.*

V. reflexum (reflexed-leaved). *fl.*, corolla red, coriaceous, rather acutely five-angled; corymbs small, short, few-flowered, or many-flowered and then sub-globose, sub-terminal and axillary. January. *l.* small, reflexed or horizontally spreading, ½in. to ¾in. long, almost sessile, oblong-lanceolate, acute, sharply serrated except at the base; young ones bright pale red. Stem branched from the base; branches 1ft. to 2ft. long, sparingly divided, leafy, pendulous. Bolivia, 1869. Greenhouse evergreen. (B. M. 5781.)

V. resinosum (resinous). A synonym of *Gaylussacia resinosa.*

V. Rollisoni (Rollison's). *fl.* on spreading pedicels, drooping; corolla rich scarlet, the limb of five acute lobes; racemes always terminal, nearly sessile, four to six-flowered. *l.* about ¾in. long, obovate, sub-cuneate, coriaceous, glossy, entire, sometimes retuse. Branchlets angled. *h.* 2ft. or more. Java, 1851. An erect, much-branched, slightly hairy, leafy, stove, evergreen shrub. (B. M. 4612.)

V. rugosum (wrinkled). A synonym of *Pentapterygium rugosum.*

V. Sprengelii (Sprengel's). A garden synonym of *V. Myrsinites.*

V. stamineum (thready).* Deerberry; Squaw Huckleberry. *fl.* nearly all axillary; corolla dull purplish or yellowish-green, deeply five-cleft; awns of the anthers very much shorter than the elongated tubes. *fr.* greenish or yellowish, large, pear-shaped or globular, mawkish. *l.* pale and dull or glaucous, especially beneath, oval to lanceolate-oblong. Branches diverging, minutely pubescent or at length glabrous. *h.* 2ft. to 3ft. 1772. (A. B. R. 263.)

V. tenellum (tender). A variety of *V. virgatum.*

V. uliginosum (swamp-loving). *fl.*, corolla pale pink, ⅛in. long sub-globose; peduncles one to three together, ⅛in. long, one-flowered. *fr.* smaller than in *V. Myrtillus.* *l.* oblong or obovate, ½in. to 1in. long, obtuse or acute, quite entire, coriaceous, glaucous beneath. Stems 6in. to 10in. long, naked below, procumbent; branches ascending. Arctic regions of Northern hemisphere. (F. D. 231; Sy. En. B. 878.)

FIG. 147. FLOWERING BRANCH OF VACCINIUM VITIS-IDÆA.

Vaccinium—*continued.*

V. virgatum (twiggy). *fl.* on short pedicels; corolla rose-coloured, three to four lines long; clusters sometimes twiggy on naked branches. *fr.* black, sometimes with a bloom. *l.* ob-ovate-oblong to cuneate-lanceolate, or oblong-lanceolate, usually acute or pointed and minutely serrulated, rather thin, 1in. or so long. *h.* 3ft. Shrub more or less pubescent. (A. B. R. 181; B. M. 3522; W. D. B. i. 33, 34.) *V. fuscatum* (B. R. 302) is a form of this species, having deep rose-coloured flowers and red pedicels and bracts, approaching *V. formosum*.

V. v. tenellum (tender). *fl.* nearly white, in shorter or closer clusters; corolla barely ¼in. long. *l.* mostly small. A low form.

V. Vitis-Idæa (Vine of Mount Ida).* Brawlins; Cowberry; Flowering Box, &c. *fl.* crowded in short, terminal, drooping racemes; corolla pink, campanulate. *fr.* red, globose, ⅓in. in diameter, acid. *l.* obovate, ½in. to 1¼in. long, green above (like Box), dotted beneath, very coriaceous, bifarious, the margins revolute, thickened, entire or minutely serrulated. Stems wiry, tortuous, procumbent; branches 6in. to 18in. long, trailing or ascending. Europe (Britain). Evergreen. See Fig. 147. (F. D. 40; Sy. En. B. 877.)

VACUOUS. Empty; a term applied to cases when an organ does not contain what usually belongs to it. Bracts which usually support flowers are said to be Vacuous when they have no flowers in their axils.

VAGIFORM. Having no certain figure.

VAGINA. A sheath; *e.g.*, a petiole rolled round a stem.

VAGINATE. Sheathed.

VAGINULARIA. Included under *Monogramme*.

VAILLANTIA (named in honour of Sebastian Vaillant, 1669-1722, an eminent French botanist, author of "Botanicon Parisiense"). SYN. *Valantia*. ORD. *Rubiaceæ*. A genus including two or three species of small, branched, annual herbs, natives of South Europe, the Mediterranean region, and Western Asia. Flowers white or yellow, small, ternate. Leaves in whorls of four, lanceolate or obovate. The species are of no interest from a horticultural standpoint.

VALANTIA. A synonym of **Vaillantia** (which *see*).

VALDESIA. A synonym of **Blakea** (which *see*).

VALDIVIA (so called from the town of Valdivia, in Chili, in the neighbourhood of which the genus is found). ORD. *Saxifrageæ*. A monotypic genus. The species is a singular and ornamental, small, half-hardy, evergreen shrub, with short, terete stems, probably now lost to cultivation.

V. Gayana (Gay's). *fl.* red, pedicellate, few in a short, axillary, hairy raceme; calyx five-lobed, the tube adnate with the ovary; petals five to seven, perigynous, linear, acuminate, bearded within at the base; stamens five to seven. *l.* ample, alternate and sub-opposite, obovate-lanceolate, acute, argutely glandular-erose or toothed, membranous; stipules wanting. *h.* 6in. Chili to Valdivia, 1863.

VALERIAN. *See* **Valeriana.**

VALERIANA (a mediæval name, said to be derived from *valere*, to be healthy; in allusion to its powerful medicinal qualities). Valerian. ORD. *Valerianeæ*. A large genus (nearly 150 species) of mostly hardy, perennial herbs, sub-shrubs, or shrubs, mostly inhabiting North temperate regions and extra-tropical South America; a few are natives of Brazil or the East Indies. Flowers white or pink; calyx at first entire, but forming a feathery crown at fruiting time; corolla with a short or rarely elongated tube and a five-cleft, spreading limb; stamens three, rarely one or two by abortion. Fruit compressed. Leaves, especially the radical ones, entire or toothed, or the cauline ones (or all) pinnatifid, or once, twice, or thrice pinnatisect. Few of the species have any horticultural merit. The medicinal qualities of *V. officinalis* are, however, extensive. Those described below are hardy perennials; they thrive in common soil, and may be readily increased by divisions.

V. angustifolia (narrow-leaved). A synonym of *Centranthus angustifolius*.

Valeriana—*continued.*

V. Calcitrapa (Calcitrapa). A synonym of *Centranthus Calcitrapa*.

V. Cornucopiæ (Cornucopia). A synonym of *Fedia Cornucopiæ*.

V. dioica (diœcious). Marsh Valerian. *fl.* pale rose-coloured, mostly unisexual, in terminal corymbs; corolla tube short. Early summer. *l.*, radical ones and those of the runners long-stalked, ovate, entire, ½in. to 1in. long; cauline ones few, mostly pinnate, with one terminal segment and several pairs of smaller ones, all entire. Flowering stems 6in. to 8in. high. Europe (Britain). (Sy. En. B. 668.)

V. montana (mountain-loving). *fl.* pink; corymbs at length paniculate. July. *l.*, lower ones oblong or obovate, obtuse, slightly toothed; upper ones lanceolate, acute. *h.* 9in. Mountains of Europe, 1748. Plant glabrous or slightly pilose, erect. (J. F. A. 269; L. B. C. 317.)

V. m. rotundifolia (round-leaved). *l.*, lower ones nearly round. Stems dwarfer than in the type. (B. M. 1825.)

FIG. 148. VALERIANA OFFICINALIS, showing (*a*) Upper Portion of Plant; (*b*) Flower, with Corolla removed; (*c*) Corolla, cut open; (*d*) Plumose Crown of Fruit.

V. officinalis (officinal). All-heal; Common Valerian; St. George's Herb, &c. *fl.* pink; corymb contracted or loose, at length sub-paniculate. June. *l.* all, or nearly all, pinnatisect; segments seven or eight pairs, lanceolate, serrated. Stems sulcate. *h.* 3ft. Europe. A very variable species. See Fig. 148. (B. M. Pl. 146; F. D. 570; Sy. En. B. 666.)

V. Phu. *fl.* white, in a paniculate corymb. August. *l.*, radical ones oblong or elliptic, undivided; cauline ones pinnately lobed, the lobes oblong. Stem terete, smooth. *h.* 2ft. Caucasus (an escape from cultivation in Europe). Plant glabrous, erect.

V. P. aurea (golden).* This only differs from the type in the bright golden-yellow colour of the young growths in spring.

V. ruthenica (Russian). A synonym of *Patrinia sibirica*.

V. sibirica (Siberian). A synonym of *Patrinia sibirica*.

VALERIANEÆ. A natural order of annual or perennial herbs, sub-shrubs, or rarely shrubs, mostly found in temperate and frigid regions of the Northern hemisphere, copious in Western America and the Andes, rarely found in tropical Asia, Brazil, Guiana, and the West Indies. Flowers cymose or solitary; calyx tube adnate to the ovary, often small, sometimes obsolete; corolla white, pale blue, red, or (in *Patrinia*) yellow, superior, gamopetalous, the base of the tube often attenuated, gibbous or spurred, the limb spreading, three to five-cleft or bilabiate; stamens one to four, inserted below or above the middle of the tube, often exserted; filaments free; anthers two-celled; cymes terminal or axillary, clustered, or loosely corymbose or paniculate. Fruit dry, indehiscent. Leaves opposite, exstipulate, often mostly radical or clustered at the base of the stem, entire or toothed; cauline ones sometimes few, small, or wanting, sometimes many, entire, or often as large as the radical ones, and toothed, pinnatifid, or once, twice, or thrice pinnatisect. The medicinal qualities of *Valerianeæ* have been known from ancient times; the plants now take rank at the head of the vegetable anti-

Valerianeæ—*continued.*

spasmodics. The order includes nine genera, and about 300 species. Examples: *Centranthus, Nardostachys, Patrinia, Valeriana.*

VALERIANELLA (a diminutive of *Valeriana*). SYNS. *Fedia* (of Gærtner), *Odontocarpa, Polypremum* (of Adanson). ORD. *Valerianeæ.* A genus comprising about fifty species of small, hardy, dichotomously-branched, annual herbs, natives of Europe, North Africa, West Asia, and North America. Flowers whitish, pale bluish, or pink; calyx limb toothed, lobed, or wanting; corolla tube short or rarely elongated, the limb spreading, five-cleft; stamens three; cymes sometimes fastigiately corymbose-paniculate, sometimes densely globose at the tips of the branches; bracts free. Radical leaves rosulate, entire; cauline ones entire, toothed, or rarely incised-pinnatifid. *V. carinata* and *V. olitoria* are the only species calling for description in this work. For cultural directions, &c., *see* **Corn Salad.**

V. carinata (keeled). Corn Salad. *fr.* oblong, boat-shaped; fertile cell not corky; calyx limb indistinct. Europe (Britain). Sir J. D. Hooker regards this as "probably a variety of *Fedia olitoria*, which it resembles in all characters save those of the fruit."

V. olitoria (culinary). Common Corn Salad; Lamb's Lettuce; White Potherb. *fl.* pale lilac, minute, in capitate cymes. April to June. *fr.* minute, glabrous or hairy; fertile cell corky on the back, the empty ones contiguous or confluent; calyx limb wanting. *l.* 1in. to 3in. long, linear-oblong or oblong-lanceolate, quite entire or toothed: cauline ones half-amplexicaul. *h.* 6in. to 12in. Europe (Britain), &c. An excellent salad. *See also* **Corn Salad.**

VALERIAN, GREEK. A common name for **Polemonium cæruleum** (which *see*).

VALERIAN, LONG-SPURRED. A common name for **Centranthus macrosiphon** (which *see*).

VALERIAN, RED OR SPUR. *See* **Centranthus ruber.**

VALERIANWORTS. The plants of the natural order *Valerianæ.*

VALLARIS (perhaps from *vallo*, to inclose; the plants are said to be used in Java for fences). SYNS. *Emericia, Peltanthera.* ORD. *Apocynaceæ.* A small genus (five or six species) of tropical Asiatic and Malayan, stove, twining shrubs. Flowers white, cymose or fascicled; calyx five-parted, glandular or not within; corolla salver-shaped, with a short tube, a naked throat, and broad lobes; stamens at the top of the tube, the filaments very short, clavate. Leaves opposite, minutely dotted. For culture of *V. Pergularia*, the only species introduced, *see* **Vallesia.**

V. Pergularia (Pergularia). *fl.* with a disagreeable, goat-like smell; cymes glabrous or puberulous. *l.* broadly elliptic or obovate, or rounded abruptly, shortly acute, membranous, 4in. to 7in. long, 3in. to 4in. broad, glabrous or puberulous beneath; petioles 1in. to 1½in. long. Bark pale. India, 1818.

VALLESIA (name commemorative of Francisco Valles, physician to Philip II. of Spain; he died in 1592). ORD. *Apocynaceæ.* A small genus (two species) of American, much-branched, glabrous, stove shrubs or small trees. Flowers small, cymose; calyx five-parted, without glands; corolla salver-shaped, annulate or pilose within the throat, the lobes five, ovate or lanceolate, twisted; stamens included below the apex of the tube. Leaves alternate, lanceolate or oblong. It is doubtful whether *V. dichotoma* is still in cultivation. A compost of sandy loam and peat suits it. Propagation may be effected by means of cuttings, inserted in sand, under a glass, in heat.

V. dichotoma (dichotomous). *fl.* white, ¼in. long, numerous: cymes dichotomous, half the length of the leaves. May. *l.* ovate-oblong, acute, obtuse at base, 2in. to 2½in. long, rugose-tubercled and pellucid-dotted; young ones pubescent. Branches dichotomous, terete. *h.* 3ft. Peru, 1822.

VALLISNERIA (named after Antonio Vallisneri, 1661-1730, an Italian botanist, Professor at Padua). ORD. *Hydrocharideæ.* A monotypic genus. The species is a half-hardy, aquatic, submerged herb, found in fresh-water lakes, ditches, &c. It is largely grown in aquaria in this country, and requires to be planted deeply in the water.

V. spiralis (spiral). Eel Grass; Tape Grass. *fl.* white, minute, apparently forming an ovoid or globular head not quite so long as the diœcious, shortly bi- or trifid spathes. July. *l.* very long and narrow when the water is deep, short in shallow water, obtuse or acute and more or less minutely toothed at the ends, or sometimes perhaps quite entire. Stems very short, sometimes stoloniferous. Warm and temperate regions, 1818. The male flowers are borne on a very short peduncle, and are sessile on a conical axis. At the flowering period, the female peduncle gradually lengthens, so that the flower finally floats on the surface of the water. Then the male submerged flowers detach themselves spontaneously from their peduncle and rise to the surface. After fertilisation, the peduncle of the female flower contracts spirally, and the ovary descends to the bottom of the water to ripen its seeds.

VALLONEA OAK. *See* **Quercus Ægilops.**

VALLOTA (named after Pierre Valot, a French botanist, who wrote a description of the Royal Gardens in 1623). ORD. *Amaryllideæ.* A monotypic genus. The species is a beautiful, greenhouse, bulbous plant. It requires a soil composed of good, fibrous loam, leaf mould, and sand, in equal parts. The bulbs should be placed from 6in. to 8in. below the level of the surface of the soil, and surrounded with sand, after which they may be covered with the compost, which should be pressed firmly around them. They should not be disturbed for years, and will ultimately establish themselves and produce grand masses of blossom. The best season for planting a fresh stock is June and July, when they commence root action before the flower-stems are sent up. If the surface of the soil in which the bulbs are planted be covered with green Saxifrage or Sedum, it will give a very neat and pleasing appearance when the plants are in flower. During their growing season, and in dry weather, an occasional soaking of water or liquid manure will prove very beneficial to Vallotas.

V. purpurea (purple).* Scarborough Lily. *fl.* 3in. to 4in. long, several in an umbel, sessile or shortly pedicellate; perianth red, funnel-shaped, straight, erect, the tube short, the throat enlarged, the lobes oblong-ovate, connected at base by a small callus; stamens erect, equal; involucral bracts two or three, membranous; scape robust, fistular, 2ft. to 3ft. high. May. *l.* equalling the scape, lanceolate-linear, entire, obscurely reticulate-veined. South Africa, 1774. (R. H. 1870, 50.)

V. p. eximia (choice).* *fl.* of the same shade of colour as in the type, 4in. across, chiefly distinguishable for the white throat, with crimson feather, not unlike what is seen in some varieties of Gladioli. (F. M. ser. i. 225.)

V. p. magnifica (magnificent). This is hardly distinct from *V. p. eximia*, though its raisers consider it larger, brighter in colour, and a more robust grower than any other. It was exhibited with flowers 5in. across. (Gn. xxx., p. 245.)

V. p. major (greater). *fl.*, perianth reddish-scarlet, the throat hyaline-fenestrate; anthers longer. SYN. *Amaryllis purpurea* (B. M. 1430).

V. p. minor (lesser). *fl.*, perianth cherry-red, the throat opaque-fenestrate; anthers shorter. (B. R. 552.)

VALONIA. A commercial name for the acorn-cups of *Quercus Ægilops.*

VALVATE, VALVULAR. United by the margins only; opening as if by doors or valves, as do most indehiscent fruits and some anthers.

VALVES. The doors by which various bodies open; the term is also applied to the pieces into which a capsule splits.

VALVES. In all heating arrangements by hot water, Valves are requisite for regulating the passage of heat to different houses and pits, and for shutting it off altogether from any part when not required. The ordinary kind, which can easily be opened or closed with one

Valves—*continued.*

hand, answers very well for the mere purpose of regulating heat. A high-pressure Valve, the aperture in which is opened and closed by means of a screw and thread, is sometimes put in near the boiler when there is more than one main, or when two boilers are connected for working both together and separately. When these Valves are screwed down, the water cannot circulate or pass, and this is of great advantage in case of repairs being necessary to one of the boilers, as the other can meanwhile be kept at full work. High-pressure Valves are not required on all boilers, but sufficient of the ordinary kind should be introduced where necessary to insure the apparatus being worked readily and the regulation of heat kept under easy control.

VANDA (the Indian name of the original species). ORD. *Orchideæ.* A genus embracing about thirty species of very beautiful, stove, epiphytal Orchids, natives of the East Indies and the Malayan Archipelago, one being also found in tropical Australia. Flowers showy or rarely mediocre, shortly pedicellate, usually fragrant; sepals and petals free, sub-equal, much spreading, often narrowed or nearly clawed at base; lip continuous with the column, spreading, saccate or obtusely spurred at base, the lateral lobes erect, rounded or reduced to auricles, the middle one spreading; column short, thick, wingless; pollen masses two; bracts short; racemes simple, loose; peduncles lateral. Capsules often on rather long pedicels. Leaves distichous, spreading, coriaceous or slightly fleshy, often emarginate or shortly bilobed at apex, flat or (in *V. Hookeriana* and *V. teres*) terete. Stem leafy, not pseudo-bulbous. The Vandas require more light than most other Orchids; indeed, many successful growers do not use shading for them at all. During the period of growth, say from March or April until about October, a high temperature and abundance of moisture are essential; the thermometer should not fall below 70deg. or 75deg. during the day, and may be allowed to rise to 85deg. or even higher in sunny weather. The night temperature during the growing season should not fall more than about 10deg. below that maintained during the day. In the winter months, 60deg. or 65deg. at night will be sufficient, and less water will be required—none being allowed to lodge in the axils of the leaves. The most rational method of growing the plants is to fix them in baskets, filled three-fourths of their depth with broken potsherds, and the rest with clean, fresh sphagnum. If rafts or blocks of wood are employed, more care is necessary in watering, for, if an insufficient supply is given, the leaves are apt to shrivel and the lower ones to fall off. As pots are more readily moved, they are frequently employed by exhibitors; the directions as to cultivation in baskets should be followed if pots are used. *V. cærulea* requires less heat than the other kinds; indeed, it succeeds sometimes better under almost cool treatment. *V. teres* should be placed close to the glass, in a warm, sunny house, and supplied with abundance of water when growing; when at rest, less will suffice. Should the plants of any of the tall-growing species become too high, the tops may be cut off and potted in potsherds and sphagnum. New growths often spring from the base of the old plants, and from the stems of those which have been cut back; these allow the species to be readily propagated.

V. alpina (alpine). *fl.* pale green, small; sepals and petals oblong; lip yellowish, streaked with dull purple, gibbous below the apex, emarginate; basal hollow deep purple; raceme subsessile, erect, two or three-flowered. *l.* channelled, recurved, obliquely (sometimes acutely) bilobed. Khasya, 1837. SYN. *Luisia alpina.*

V. Batemanni (Bateman's). A synonym of *Stauropsis Batemanni.*

V. Bensoni (Benson's). *fl.* white outside, about 2in. in diameter; sepals and petals yellowish-green, dotted with reddish-brown on the inside, obovate, obtuse; lip pink, with a violet, reniform apex, ovate in front, convex, trilamellate on the disk, the small

Vanda—*continued.*

basal auricles and conical spur white; scapes rigid, 1½ft. high. *l.* coriaceous, lorate, channelled, toothed at apex. Rangoon, 1866. (B. M. 5611; F. d. S. 2329; G. C. 1867, 180.)

V. bicolor (two-coloured). *fl.* white externally, yellowish-brown inside, with obscure, livid tessellations, less than 2in. across; sepals and petals falcate; lip lilac, with large, white auricles, giving the base a broad, cordate appearance, dotted with lilac and tinged with yellow; raceme erect, rigid, few-flowered, longer than the leaves. *l.* lorate, coriaceous, half-twisted in the middle, very oblique and somewhat three-toothed at apex. Bhotan, 1875.

V. cærulea (blue).* *fl.* sometimes as much as 5in. across; sepals and petals pale blue, membranous, oblong, obtuse, shortly stalked; lip deep blue, small, coriaceous, oblong-linear, the point obtuse, with two diverging lobes; racemes ten or more-flowered; scapes erect, much longer than the leaves. Autumn. *l.* loriform, channelled, coriaceous, unequally truncate, with acute lateral lobes. Stem erect, 2ft. to 3ft. high. Khasya, 1849. A very handsome plant. (F. d. S. 609; I. H. 246; L. J. F. 102; L. & P. F. G. i. 36; R. X. O. i. 5; W. S. O. 18.) *V. c. grandiflora* is a fine, large-flowered variety. (R. H. 1881, p. 290.)

V. cærulescens (bluish) *fl.* ten to twenty on a slender, erect, axillary scape; sepals and petals pale mauve-blue, cuneate-ovate, twisted at the clawed base; lip violet, obcuneate, dilated, emarginate, with lilac-purple auricles, the spur tipped with green. Spring. *l.* coriaceous, ligulate, dark green, 5in. to 7in. long, truncately bilobed. Stems elongated. Burmah, 1869. A pretty little species. See Fig. 149 (for which we are indebted to Messrs. Veitch and Sons). (B. M. 5834; F. M. ser. ii. 256; G. C. 1870, p. 529; W. O. A. i. 48.)

V. c. Boxallii (Boxall's).* *fl.*, sepals and petals white, tinged with lilac; front lobe of the lip dilated, deep violet, bordered with white; disk dark blue-striped; raceme rather close, on a short scape. *l.* obliquely erose at apex. 1877. (B. M. 6328.)

V. c. Lowiana (Low's). Similar to *Boxallii*, but having an amethyst-coloured middle lobe of lip and a dot of amethyst at each end of the sepals. 1877.

V. Cathcarti (Cathcart's).* *fl.* 3in. across; sepals and petals white outside, yellow with reddish-brown bands internally, sessile, concave, roundish-oblong; lip three-lobed, the lateral lobes white, red-streaked at base, small, the middle lobe whitish, with a yellow, crenate, incurved border; disk with two erect calli; scape erect, leaf-opposed, four or five-flowered. *l.* 6in. to 7in. long, linear-oblong, unequally bilobed, pale green. Sikkim Himalayas, 1864. A tall, scrambling species. (B. M. 5845; C. H. P. 23; F. d. S. 1251-2; F. M. ser. ii. 66; G. C. 1870, 1409; I. H. 187; W. O. A. iv. 168.) *Arachnanthe Cathcarti* is now the correct name of this species.

V. concolor (one-coloured). *fl.* rather distant, numerous, in elongated, lateral racemes; sepals and petals white outside, cinnamon-brown within, oblong-obovate, wavy; lip three-lobed, downy at base, the side lobes white with rosy dots, the middle one cinnamon-brown, cuneate and bilobed at apex; spur attenuated. *l.* membranous, evergreen, lax, obliquely three-toothed at apex. Stems erect, 5ft. to 6ft. high. China, 1850. (B. M. 3416, under name of *V. Roxburghii unicolor.*)

V. cristata (crested). *fl.*, sepals and petals yellow-green, oblong, obtuse, the petals incurved; lip buff, striped with rich purple, divided at the end into two or three narrow, acute, diverging, unequal lobes; racemes erect, three to six-flowered, shorter than the leaves. March to July. *l.* channelled, recurved, truncate and three-toothed at apex. Stems erect. Nepaul, 1818. (B. M. 4304; B. R. 1842, 48; R. G. 680.)

V. Denisoniana (Denison's). *fl.* thick and fleshy, medium-sized; sepals and petals white, slightly tinged with green, the dorsal sepal and petals spathulate; lip white, pandurate; the apex two-lobed, the base with two nearly quadrate auricles; spur short, conical; racemes axillary, five or six-flowered, on stout, ascending peduncles. April. *l.* lorate, rigid, recurved, sharply bilobed at apex, dark green. Stems erect. Arracan Mountains, 1869. (B. M. 5811; F. & P. 1869, p. 250; G. C. n. s., xxiv., p. 105; I. H. ser. iii. 105.)

V. D. hebraica (Hebrew-marked). *fl.*, sepals and petals sulphur-coloured on both sides, but darker within and with spots and bars resembling Hebrew letters; anterior part of the blade of the lip olive-green; spur orange inside. July. Burmah, 1885. (W. O. A. 248.)

V. D. punctata (dotted). *fl.* sulphur-coloured, with some brown spots on the petals and odd sepal, the middle and base of the lip white.

V. densiflora (dense-flowered). A synonym of *Saccolabium giganteum.*

V. fuscoviridis (fuscous-green). *fl.* about 1½in. across, having a slightly fishy smell; sepals and petals dull brown, with a little greenish-yellow at the edge, the petals clawed, falcate, broader than the sepals; lip pure greenish-yellow, tomentose at base, five-furrowed, bilobed; spur cylindrical; racemes short, few-flowered. Spring. *h.* 1ft. Java, 1848. (G. C. 1848, p. 351; L. & P. F. G. ii. p. 20.)

V. gigantea (gigantic). A synonym of *Stauropsis gigantea.*

Vanda—*continued.*

V. Goweræ (Gower's). A garden name for *V. undulata.*

V. Griffithii (Griffith's). *fl.* yellow, brown, and lilac, much smaller than those of *V. cristata* (which this species resembles); sepals linear-oblong, recurved; petals acuminate; lip ovate, elongated, furrowed, concave at base. *l.* channelled, recurved, sharply and unequally three-lobed. Bhotan.

V. hastifera (halbert-bearing). *fl.* many in a loose raceme; sepals and petals light yellow, blotched with red inside: lip white, marked with brown and mauve, the lateral lobes semi-oblong, triangular, the front lobe halbert-shaped, covered with hairs at its base. *l.* linear-ligulate, erose at apex. Sondaic Archipelago, 1884. A rare, tall-growing Orchid.

V. helvola (pale red). *fl.* wine-red, shading into pale purple; lateral sepals connivent under the lip; lateral lobes of the lip bright purple, short, the middle lobe triangular-hastate, tumid inside and a little furrowed, concave beneath, the little sac having a pair of small callosities on the side opposite the column; raceme erect, shorter than the leaves, about three-flowered. March and April. *l.* rigid, slightly undulated, carinate at base, oblique and obtuse at apex. Java, 1850.

Vanda—*continued.*

V. Hookeriana (Hooker's).* *fl.* 2½in. across, membranous; sepals white, tinted with rose; petals larger, white, spotted with magenta, undulated, spathulate-oblong; lip cuneate at base, three-lobed, 1½in. broad, white, lined and spotted with magenta-purple; a large, deep purple auricle on each side of the column; raceme two to five-flowered; peduncle leaf-opposed. September. *l.* erect, 2in. to 3in. long, terete, pale green, subulate-pointed. Stems rooting, elongated, terete. Borneo. (I. H. ser. iii. 484; W. O. A. ii. 73.)

FIG. 149. VANDA CÆRULESCENS.

V. insignis (remarkable).* *fl.* 2½in. across; sepals and petals light brown, spotted with chocolate-brown internally, yellowish-white outside, obovate-spathulate; lip large, almost fiddle-shaped, the side lobes white, short, the front one white, suddenly expanding into a concave, semi-lunar limb of light purplish-rose; racemes about as long as the leaves, five to seven-flowered. May and June. *l.* channelled, rigid, linear-ligulate, curving, unequally cut or denticulate at apex. Stems sub-erect. Moluccas, 1846. (B. M. 5759; L. & P. F. G. ii., p. 19; W. O. A. iv. 172; W. S. O. 3.)

V. i. Schröderiana (Baron Schröder's). *fl.*, sepals and petals light yellow; lip pure white, with a large, concave, anterior limb

Vanda—*continued.*

Autumn. Malay Islands, 1883. A very chaste and distinct novelty.

V. lamellata (plated). *fl.* pale yellow, streaked with dull, pale red, in long, loose, erect racemes; sepals and petals obovate, undulated, the lower ones larger and slightly incurved; lip with two diverging, elevated lines, acute, obcuneate, retuse; auricles small, rounded; spur short, cylindrical-conical, hairy within. August. *l.* coriaceous, obliquely and acutely bidentate. Philippines, 1837.

V. l. Boxallii (Boxall's).* *fl.*, dorsal sepal creamy-white, the inner part of the lateral ones reddish-brown tinged with purple; petals white; limb of the lip rich magenta-rose towards the front, the disk with six reddish-purple stripes running back to the mouth of the tube; racemes fourteen to twenty-flowered. November and December. *l.* much recurved. Stems erect. 1880. (G. C. n. s., xv., p. 87; Gn. xix. 287.)

V. limbata (bordered). *fl.* 2in. across; sepals and petals cinnamon-brown, blotched and tessellated with darker reddish-brown, evenly bordered with yellow, tinged with lilac outside; lip rosy-lilac, margined with white, quadrate, slightly pandurate, the disk tumid, with five to seven parallel furrows; racemes loose, erect, about twelve-flowered. June. *l.* 8in. to 10in. long, channelled, coriaceous, obliquely retuse at apex. Stems stout, with long, thick roots. Java, 1875. (B. M. 6173; W. S. O. ser. iii. 9.)

V. Lindeni (Linden's). *fl.* disposed in a handsome raceme; sepals and petals light yellow, with red dots on the disk, cuneate-oblong, wavy; lip whitish-yellow, with nearly square side lobes and a triangular, two-edged middle lobe produced into a sharp angle under two tumours at the apex, sulcate beneath, with a linear, velvety, ascending auricle on each side at the base, and three furrows over the disk, the tumours and side-lobes purple-spotted, the disk marked with four purple lines, the tip under the tumours brownish; spur conical, hairy inside. Sunda Isles, 1886.

V. Parishii (Parish's).* *fl.* large; sepals and petals greenish-yellow, dotted with reddish-brown, cuneate-oblong, acute; lip strongly and peculiarly scented, the front lobe pale magenta, narrowly margined with white, rhomboid, gibbous below the apex, with a median keel and a violet, conical callus at base; spur short, gibbous; auricles white, orange-striped; scape erect, several-flowered. Summer. *l.* broadly ligulate, obtuse, unequally bilobed, fleshy, bright green. Moulmein, 1870. A handsome, dwarf species. (W. O. A. i. 15.)

V. P. Marriottiana (Sir W. H. S. Marriott's). *fl.* not scented; sepals and petals bronzy-brown, suffused with magenta; lip having a rich magenta, rhomboid front lobe and white basal auricles; raceme about six-flowered. *l.* slightly emarginate. Stems closely leafy. 1880. (W. O. A. ii. 61.)

FIG. 150. PORTION OF INFLORESCENCE OF VANDA PARVIFLORA.

V. parviflora (small-flowered). *fl.*, sepals and petals pale yellow, oval; lip funnel-shaped, the broadly oblong, rounded front lobe white, with purple crests on the fleshy disk, and dotted with lilac; spur short, conical; racemes short, erect, many-flowered. Summer. *l.* lorate, obliquely and obtusely bilobed at apex, with an intermediate cusp. India. A beautiful little plant. See Fig. 150. SYNS. *V. testacea*, *Aërides testaceum*, *A. Wightianum* (B. M. 5138; F. d. S. 1452.)

V. Roxburghii (Roxburgh's).* *fl.*, sepals and petals pale green, with chequered lines of olive-brown, oblong-obovate, the outer surface white; lip violet-purple and convex in the front part, deeper purple towards the apex, the lateral lobes white, lanceolate; spur pinkish, short; racemes six to twelve-flowered, on erect peduncles. Summer. *l.* ligulate, recurved, channelled, coriaceous, obliquely three-toothed at apex. Stems erect, dwarfish, stout. Bengal, 1850. (B. M. 2245; B. R. 506; F. d. S. Feb. 1846, 641, f. 2; L. & P. F. G. ii. 42, f. 2; W. O. A. 59.) Of this species there are several varieties, one having a dark blue lip, and another, *V. tessellata* (P. M. B. vii. 265; I. H. n. s. 579, *V. R. rubra*) a pink lip.

V. Sanderiana (Sander's).* *fl.* flat, about 4in. across; dorsal sepal and the smaller petals pink, slightly stained with buff-yellow, the lateral sepals 2in. across, pale nankeen outside, within greenish-yellow, reticulated with dull crimson; lip small, concave, pale purplish-red at base, the tip chocolate-purple, strongly recurved, three prominent keels extending from base to apex; racemes axillary, many-flowered. September and October. *l.* broadly ligulate, coriaceous, recurved, 9in. to 12in. long, deeply channelled. Philippine Islands, 1881. (G. C. n. s., xx., pp. 440-1; I. H. ser. iii. 532; W. O. A. iii. 124.)

V. S. labello-viride (green-lipped). A distinct variety, having a green lip. Mindanad, 1886.

V. Stangeana (Stange's). *fl.* four or five in a raceme; sepals and petals internally at first greenish, afterwards ochre, tessellated with dark purple-brown; auricles of the lip blunt, white with yellow and some mauve-blue spots, the middle lobe white with mauve-blue or wholly mauve-blue, cordate-triangular. Assam, 1885. (R. X. O. ii. 102.)

V. suavis (sweet).* *fl.* large and handsome, freely produced, fragrant; sepals and petals pure white outside, spotted and barred with blood-purple within, the dorsal sepal and two petals sub-lobate; lip convex, three-lobed, the front lobe pale rosy-purple, narrow, deeply bifid, the lateral ones deeper rosy-purple, ovate, flat; racemes bold, elongated, on axillary peduncles. *l.* lorate, flaccid, recurved, dark green, obliquely toothed at apex. Java, 1847. A noble plant for exhibition purposes. (B. M. 5174; F. d. S. 641, f. 3, (*Hrubyana*) 1604-5; G. C. n. s. xxii., p. 237, Wingate's var.; L. & P. F. G. ii. 42, f. 3; R. X. O. i. 12; W. O. A. iv. 180.)

V. s. flava (yellow). *fl.* yellow, with broad, oblong, rich brown spots. (B. M. 4432, under name of *V. tricolor*.)

V. s. Gottschalckei (Gottschalcke's). *fl.* deliciously scented, larger and stouter than in the type; sepals and petals more densely spotted; lip bright rosy-purple, tipped with white; pedicels deeply tinged with rose. *l.* (and stem) stouter than in the type. 1869.

V. s. Lindeni (Linden's). *fl.*, sepals, petals, and base of lip white, spotted with purple, the rest of the lip purple. 1886.

V. teres (terete).* *fl.* large; sepals oblong, the dorsal one white, slightly tinged with rose, the lateral ones creamy-white, twisted, parallel with the lip; petals rose-magenta, lighter towards the margins, larger, sub-orbicular, undulated; lip bright rose-magenta, cucullate, large, strongly veined, the throat orange, striped and spotted with crimson, the apex dilated and emarginate; spur conical; racemes leaf-opposed, mostly two-flowered. June to August. *l.* (and stems) terete, dark green. Burmah, &c., 1828. A handsome, straggling or climbing species, several feet long. (B. M. 4114; B. R. 1809; P. M. B. v. 193; R. H. 1856, 22.)

V. t. Andersoni (Anderson's). *fl.* richer and deeper in colour, freely produced; racemes 10in. long, five or six-flowered. (W. S. O. ser. iii. 2.)

V. t. aurorea (rosy). *fl.*, sepals white; petals white, slightly rose-tinted; throat light ochre, with rosy lobes, which are furnished with two rows of small, purple dots; column light rose-purple. 1884.

V. t. candida (white). *fl.* white. A distinct and beautiful form.

V. teretifolia (terete-leaved). A synonym of *Sarcanthus teretifolius*.

V. tessellata (tessellated). A form of *V. Roxburghii*.

V. testacea (tile-coloured). A synonym of *V. parviflora*.

V. tricolor (three-coloured).* *fl.* white outside, handsome, fragrant; sepals and petals pale yellow spotted with brownish-red within, oblong-obovate, obtuse; lip three-lobed, the middle lobe rose-magenta, paler at the tip, convex, cuneate, deeply emarginate, the disk marked with five white lines, the basal lobes white, erect, rounded; spur white, short, compressed; column white, short, thick; racemes short, dense, on axillary peduncles. *l.* lorate, channelled, recurved, obliquely bilobed and somewhat erose at apex. Stems erect, tall. Java, 1846. (F. d. S. 641; L. J. F. 136; L. & P. F. G. ii. 42; W. O. A. ii. 77.) The following varieties of this superb species are enumerated by B. S. Williams, in the sixth edition of the "Orchid Grower's Manual": DALKEITH, a very highly-coloured form; DOWNSIDE, flowers large, and very rich in colour and markings.

V. t. Corningii (Corning's). *fl.*, sepals and petals rich yellow, spotted and streaked with deep crimson, margined on both surfaces with rosy-purple; lip dark plum-colour, softened off to pale rose towards the base. *l.* very broad, dark green, stout.

V. t. Dodgsoni (Dodgson's). *fl.* very highly scented, borne in great numbers on the racemes; sepals and petals light amber, streaked and blotched with reddish-brown, and margined with violet; lip rich violet-purple, with a few white blotches near the base.

Vanda—*continued.*

V. t. insignis (remarkable). *fl.*, sepals and petals light yellow, spotted with crimson; lip pale lilac. Generally spring and autumn. This handsome variety was formerly known in gardens as *V. insignis*.

V. t. Patersoni (Paterson's). *fl.* about 2in. in diameter, appearing on very small plants; sepals and petals creamy-white, densely spotted with cinnamon-brown, broad; lip bright magenta. (G. C. n. s., xxii., p. 236.)

V. t. planilabris (flat-lipped). *fl.* larger and brighter-coloured than in the type; sepals and petals citron-yellow, thickly spotted with rich brown, very broad, clawed or narrowed to the base; lip rose-coloured, margined with purplish-mauve, and striped with chocolate-purple on the disk, large and flat. (W. O. A. ii. 87.)

V. t. Russeliana (Russel's). *fl.* very bright-coloured, in long racemes. A beautiful variety, having a peculiar, pendulous style of growth; it is very robust.

V. t. Warneri (Warner's). *fl.*, sepals and petals distinctly margined with deep rose; lip deep rosy-purple. *l.* linear, lorate, peculiarly ribbed. (W. S. O. ser. ii. 39.)

V. undulata (waved). *fl.* white, very freely produced in racemes; sepals and petals lanceolate, much undulated; lip having the lateral lobes greenish, and marked with orange lines on the disk. *l.* coriaceous, ligulate, unequally bilobed. India, 1875. This has been sold under the name of *V. Goweræ*.

V. violacea (violet). A synonym of *Saccolabium violaceum*.

V. Vipani (Vipan's). *fl.*, sepals and petals blunt, rhomboid, white externally, within pale at the base, marked with short, brownish-purple lines, the rest of the sepals brownish-olive, and of the petals inclining to ochre, all striped with dark brown-purple; middle lobe of the lip olive-green, the side auricles yellow. *l.* very long and narrow. Burmah, 1882.

VANDELLIA (named in honour of Dominico Vandelli, Professor of Botany at Lisbon, who wrote a work on Portuguese plants in 1623). Including *Tittmannia* (of Reichenbach). ORD. *Scrophularineæ*. A genus embracing about thirty species of stove, greenhouse, or hardy, often annual, branched herbs, inhabiting warm regions. Flowers rather small, solitary in the axils, sessile or pedicellate, or in terminal racemes; calyx five-parted or five-toothed; corolla bilabiate, the upper lip emarginate or shortly bifid, the lower one large, three-lobed; stamens five, perfect. Leaves opposite, often toothed. The few species introduced are now probably lost to cultivation.

VANDESIA. A synonym of **Bomarea** (which *see*).

VANESSA. A genus of Butterflies, conspicuous by their size (varying from 2¼in. to 2¾in. in spread of wings), their bright colours, and the bold markings on the upper surface of the wings; the lower surface is dull-coloured for concealment. The front wings have a distinct tooth above the middle of the hind margin, and the inner margin is nearly straight. The hind wings usually have a short

FIG. 151. VANESSA IO.

tooth in the hind margin (see Fig. 151). In the middle of the hind wing is a space bounded on all sides by the wing veins; the sixth and seventh veins are not united, but arise directly from the vein bounding the space. The

Vanessa—*continued.*

antennæ have the terminal club rather long. The front legs are small and useless for walking. The larvæ are long and worm-like, but covered with stiff spines on all but the first ring. The pupæ are angular; they hang by the tip of the body, and frequently bear golden or silvery-metallic spots here and there, or over most of their surface. The Butterflies are single-brooded each year, except the Small Tortoiseshell, which has a succession of broods. Most of the species hybernate as Butterflies, appearing on warm days during winter. There are five British species of the genus, viz., *V. Antiopa* (Camberwell Beauty), *V. Atalanta* (Red Admiral), *V. Io* (Peacock, see Fig. 151), *V. polychloros* (Great Tortoiseshell), and *V. Urticæ* (Small Tortoiseshell). Of these *V. Antiopa* feeds on various Willows, and *V. polychloros* on Elm; but both are local or scarce in Britain. The other *Vanessæ* feed on Nettles. The Butterflies may be distinguished from one another by the colour of the upper surface of the wings.

V. Antiopa (rarely seen in England) has a span of about 3in. across the wings; the latter are purplish-brown, with broad, yellow or yellowish-white borders, margined on the inner side with a broad, black band, in which are six or seven blue spots.

V. Atalanta has the wings nearly black, with a broad, deep red band across the middle of the front wings, and round the hind margin of the hind wings; the band on the hind wings has four black spots in it. Each front wing bears six white spots near the tip, and there is a blue and black spot at the hind angle of each hind wing.

V. Io is of the size and form shown in Fig. 151; the ground-colour is dull red, the margins are brown, the eye-like spots on the wing are variously shaded with black, lilac, red, yellow, and white; those on the hind wings are bordered with grey-brown.

V. polychloros and *V. Urticæ* are very like one another, both having tawny-orange wings, with a dark border inclosing blue spots; and in both there are three large, black spots, separated by yellow spots, on the front border, and two small, black spots near the middle, of the front wings; and the basal part of the hind wings is dark. The two species differ as follows: *V. polychloros* is usually over, and *V. Urticæ* is under, 2¼in. in spread of wings. The latter species has a white spot on the front margin of the front wings, near the tip, where the former species has a yellow spot, and in *V. polychloros* there is a black spot more on the inner border of the front wings, and the blue spots in the dark borders of the front wings are faint or absent. *V. Urticæ* is one of the earliest of British Butterflies, and is conspicuous in almost all parts of the country.

Those species of *Vanessa* that feed on Nettles are beneficial; while the others are never numerous enough in Britain to call for a special remedy.

VANGUERIA (*Voa* - *Vanguer* is the Madagascar name of *V. edulis*). SYNS. *Meynia*, *Rytigynia*, *Vanguiera*, *Vavanga*. ORD. *Rubiaceæ*. A genus comprising about thirty species of stove shrubs and small trees, sometimes spiny, inhabiting tropical and sub-tropical regions (except in Australia). Flowers white or greenish, small, cymose or fascicled; calyx tube short, the limb five, rarely four, toothed or lobed, or irregularly five to ten-toothed; corolla tube short or mediocre, the limb of five, rarely four or six, ovate, acute, acuminate, or appendiculate, at length reflexed lobes; stamens five. Fruit a dry or fleshy drupe, sometimes edible and rather large. Leaves opposite, coriaceous or membranous; stipules interpetiolar, frequently connate in a persistent ring. *V. edulis* and *V. velutina* are the only species calling for description in this work. They thrive in a compost of loam and peat. Propagation may be effected by cuttings, inserted in similar soil, under a glass, in heat.

Vangueria—*continued.*

V. edulis (edible-fruited). *fl.* green; cymes springing from below the leaves. June. *fr.* resembling an apple, but not crowned, succulent, edible, containing five stones. *l.* ovate, membranous, glabrous. *h.* 12ft. Madagascar, 1809. A small, unarmed tree.

V. velutina (velvety). *fl.* pale yellowish-green, axillary in the lower leaves, in short, dense cymes. May. *l.* large, opposite, nerved, shortly petiolate, cordate-ovate, rather acute, entire, much waved, mostly downy beneath. *h.* 3ft. Madagascar, 1829. A softly-tomentose shrub. (B. M. 3014.)

VANGUIERA. A synonym of **Vangueria** (which *see*).

VANHOUTTEA. A synonym of **Houttea** (which *see*).

VANILLA (from the Spanish *vainilla*, a little sheath; in allusion to the shape of the fruit). SYN. *Myrobroma.* ORD. *Orchideæ.* A genus embracing about a score species of stove, tall-climbing, branched Orchids, scattered over tropical regions. Flowers large, but usually dull-coloured and uninteresting, in axillary, often short racemes or spikes; sepals and petals sub-equal, free, spreading; claw of the lip adnate with the elongated, wingless column, the limb broad, concave, its base rolled around the column; bracts ovate. Capsule often elongated, fleshy, not (or at length scarcely) dehiscent. Leaves coriaceous or fleshy, nerved, sessile or shortly petiolate. *Vanilla* is remarkable in being the only genus of the order which possesses any economic value. The fruit of several species is largely employed, under its botanical name, for flavouring chocolate, liqueurs, ices, &c. *V. planifolia* produces the best Vanilla. Only four species call for description in this work. They should be potted or planted out in a narrow bed, in peat and sphagnum, and trained up a wall or on a thick piece of wood. A strong heat is favourable to their well-being. Propagation may be effected by cuttings; the climbing stems produce roots, and may be cut into lengths for the purpose.

V. bicolor (two-coloured). *fl.* very fragrant, 3in. long; sepals and petals dull red, acute, spreading; lip cream-coloured, half-free, convolute, apiculate, undulated; column bearded. *l.* ovate-oblong, sub-sessile, acute, striated, reddish on the margins. Demerara.

V. lutescens (yellowish). *fl.* 6in. across, showy, two or more together from the axils of the leaves, somewhat resembling in general appearance those of *Cattleya citrina;* sepals and petals greenish-yellow; lip very bright yellow. La Guayra, 1859. (F. d. S. 2218.)

V. Phalænopsis (Phalænopsis-like). *fl.* 3in. across, six or seven in an umbel; sepals faint blush-white, keeled behind, acute, the two lateral ones divided to the base on the lower side; petals the same colour, but less acute, channelled; lip pale rosy-blush outside, tawny-orange within, over 1in. long, broadly funnel-shaped. Stems long, rooting, leafless. Madagascar, 1869. An interesting species. (F. d. S. 1769.)

V. planifolia (flat-leaved). *fl.* wholly green, or white within, or with a white lip, 2in. across; sepals and petals lanceolate-oblong; lip callous below the serrulated, repand summit, and crested at the middle with minute, recurved scales. *fr.* 6in. long, sub-cylindrical. *l.* fleshy, 5in. to 7in. long, oblong or ovate-oblong, acute, contracted at base. Stem cylindrical. West Indies, 1800. (A. B. R. 538; B. M. Pl. 272; L. B. C. 733.)

VANILLA PLANT. *See* **Trilisa odoratissima.**

VAPOUR. Moisture which, in heated plant-structures especially, arises from the soil, walls, paths, &c., when watered, and from evaporating-troughs filled with water and placed on the hot-water pipes. Vapour in an invisible state is continually ascending from damp, heated substances; hence the feeling of moisture in the air of the interior of plant-houses, &c., and sometimes outside after rain.

VAPOURER MOTH. *See* **Orgyia antiqua.**

VARGASIA. A synonym of **Thouinia** (which *see*).

VARIEGATED. Irregularly coloured.

VARIETY. A sort or modification subordinate to a species. A Variety can only be propagated with certainty by grafts, cuttings, bulbs, tubers, or any other method which produces a new plant by the development of one or more buds taken from the old one. If the Variety generally comes true from seed, it is often called a Race.

VARIOLATE. Marked as if by the pustules or pittings of small-pox.

VARNISH-TREE. A common name for *Ailantus glandulosus, Melanorrhœa usitatissima, Rhus vernicifera,* &c.

VARRONIA. A synonym of **Cordia** (which *see*).

VASCOA. Included under *Rafnia.*

VASCONCELLEA. Included under *Carica.*

VASCULAR. Furnished with, or relating to, vessels or ducts.

VASCULAR SYSTEM. Under this name are included all those parts of plants in which true **Vessels** (which *see*) occur. As the latter are found only in flowering plants, and in Vascular Cryptogams (Ferns, Horsetails, Club-mosses, and their allies), there is no Vascular System in the remaining groups of Cryptogams, *i.e.*, in the True Mosses, Liverworts, Algæ, Lichens, and Fungi. It is often represented, or rather foreshadowed, among the Mosses and some of the species in the other groups, by bundles or strings of long, tapering cells, which, to some extent, do the same work. The Vascular System is present in the roots, stems, branches, and leaves of the Vascular Plants. It remains when continued steeping in water, or exposure to the weather, has caused the decay of all the softer cells in these plants, so that it forms the skeleton or framework on which the plants are built up. It is best seen in those parts in which the bundles or strings of which it consists are always separated by cellular tissue from one another, *e.g.*, in leaves, and in the stems of Monocotyledons and Ferns, and in young stems of herbaceous Dicotyledons. In the stems and roots of woody Dicotyledons it becomes more difficult to recognise the true nature of the Vascular System, owing to the formation of annual rings of wood and of bast by the cambium layer just below the bark.

The chief uses of the Vascular System are twofold, viz.: (1) It gives strength and mechanical support to all parts of the plant, serving as the framework for the cellular tissues, in which the work of preparing the food goes on; (2) the wood, in the Vascular System, is the channel of communication for conveying the crude sap upwards from the soil to the leaves, and the soft bast in each bundle is believed to be the chief channel by which the protoplasmic food-substances are conveyed from the leaves, in which they are prepared, to the growing points, where they are used up in forming new structures, or to the parts (tubers, seeds, &c.) where they are stored up for future use. *See* **Sap.**

VASCULUM. A botanist's collecting-box. The term is also applied to a pitcher-shaped leaf.

VASES. There are various kinds of Vases in use, both for growing plants in, and also for arranging cut flowers. Vases for terrace walls and other positions in formal flower-gardening, and also for conservatory embellishment, are made in various sizes, and in great variety of design. Terra-cotta is largely employed in their manufacture, as it withstands all weathers, and is well adapted for the purpose. Vases are also made of stone and cast iron, amongst other substances. For the arrangement of cut flowers for table and room decorations, glass Vases are best — flowers do not look so well in anything else—but sometimes silver, old china, or other valuables, are used for the purpose of exhibiting them, in addition to making them receptacles for flowers. China and glass

Vases—*continued.*

Vases may be procured in the greatest range of variety, and in shapes and sizes which suit all individual requirements. It is unnecessary to describe the various kinds, but those known as Trumpet Vases or Glasses are amongst the best for cut flowers. In dinner-table decoration the Vases should be low in stature, or, if one or more Trumpet Glasses are used down the centre, so lightly arranged with flowers that nothing shall be caused in the way of an obstruction to the view from one side of the table to the other.

VAUANTHES. A synonym of **Grammanthes** (which *see*).

VAVANGA. A synonym of **Vangueria** (which *see*).

VEGETABLE BUTTER. *See* **Bassia butyracea.**

VEGETABLE EARTH, or **VEGETABLE MOULD.** Soil largely mixed with humus or decayed remains of plants (*see* **Humus**). It is usually very dark, but the colour varies with the proportion of humus, and of the other constituents of the soil. Good Vegetable Mould may contain from 3 to 25 per cent. of humus, and is usually very fertile. A higher percentage of plant-remains is unfavourable, as organic acids are apt to be formed and to accumulate in the soil, to the detriment of most plants, though some species of wild plants prefer such a soil, *e.g.*, several prefer peat, which consists of little but humus. To render such soils as contain excess of humus fertile, it is necessary to add certain manures or other substances to them in order to hasten the decay of the vegetable remains, and to bring them into a condition fit for the nutrition of the plants for which the ground is to be prepared. *See also* **Humus.**

VEGETABLE FIRE-CRACKER. A common name for **Brodiæa coccinea** (which *see*).

VEGETABLE HAIR. A common name for **Tillandsia usneoides** (which *see*).

VEGETABLE HORSEHAIR. The fibre of *Chamærops humilis.*

VEGETABLE IVORY. The nuts of *Phytelephas macrocarpa.*

FIG. 152. FRUITS OF VEGETABLE MARROW.

VEGETABLE MARROW (*Cucurbita Pepo ovifera*). A half-hardy, trailing annual, of very easy culture, grown

Vegetable Marrow—*continued.*

in nearly every garden during summer for the fruits, which are chiefly used when about half-grown, or even in a younger state (see Fig. 152), for cooking in various ways. At these stages the flesh is exceedingly tender, but as the fruits get old it becomes drier. Cultivators sometimes allow a portion of their crop to ripen, for the purpose of converting the fleshy portion into jam, or the fruits may be kept in a dry place when ripe until midwinter for cooking. Seeds of Vegetable Marrows should be sown singly, or two in a 3in. pot, towards the end of April, and placed in a gentle heat. So soon as the plants have two rough leaves, they should be hardened by being placed in a situation where air can be admitted. Early in June, they may be planted out where they are intended to remain, and covered for a few days with hand-glasses until re-established, when the glasses may be removed. Old manure heaps are the best positions for the plants, as on these they grow and fruit abundantly. Plenty of water should be supplied throughout the summer whenever the weather is dry, and the fruit should be cut when large enough for cooking, unless required for ripening to produce seed or for using in one of the ways above mentioned. The growths need an occasional thinning during summer when they get too much crowded.

SORTS. The following are amongst the best sorts of cultivated Vegetable Marrows:

BUSH MARROW, of compact, bushy habit, not a trailer; free. CUSTARD, free-bearing and of good flavour. HIBBERD'S PROLIFIC, fruit small, egg-shaped. LONG WHITE, fine cropper; the best for general use, and when only one variety is grown. MOORE'S VEGETABLE CREAM, free-bearing, and of fine flavour. MUIR'S PROLIFIC HYBRID, an oval-shaped, cream-coloured variety; prolific. PEN-Y-BYD, fruit delicate creamy-white, nearly globular, with firm flesh; plant short-jointed and prolific; very distinct.

VEGETABLE OYSTER. *See* **Tragopogon porrifolius.**

VEGETABLE REFUSE. After being made up into a compost, and allowed to ferment for some time, Vegetable Refuse of all kinds can be most advantageously employed as manure. This treatment is especially advisable when the Refuse contains a fair proportion of woody substance, as the latter can scarcely serve as manure for plants until it has undergone chemical decomposition to some extent. When the proportion of woody substance is large, it is well to burn the Refuse slowly, in a covered heap, in which the fire is kept smouldering, but is never allowed to burst into flame. Other kinds of Refuse should be made up with layers of earth and quicklime. The latter destroys the weeds, and hastens their decay. Another good method of forming a compost is to mix the Refuse with earth, and occasionally drench the heap with liquid manure. This promotes the formation of Ammonia; and gypsum should be mixed with the earth to form Sulphate of Ammonium, which prevents the loss of the alkali, and adds much to the value of the compost. Quicklime must not be mixed with the earth, as it sets free Ammonia, which escapes as a gas into the atmosphere, and is lost. Both of these composts are excellent garden manures.

VEGETABLE SCULPTURE. *See* **Topiary Work.**

VEGETABLE TALLOW PLANT. A common name for **Stillingia sebifera** (which *see*).

VEINLET. One of the ultimate or smaller ramifications of a vein or rib.

VEINS. In general, any ramifications or threads of fibro-vascular tissue in a leaf or any flat organ (especially those which divide or branch) through which sap is carried into the parenchyma.

VEITCHIA (named in honour of the late James Veitch, of Chelsea, the leading nurseryman of his day). ORD. *Palmæ*. An imperfectly-known genus (four species have been indicated) of stove Palms, inhabiting the Fiji Islands and the New Hebrides. Male flowers much smaller than the females; spathes three (?), deciduous; spadix shortly and thickly pedunculate, the branches elongated, fastigiate, thickened at base. Fruit about 2ft. long, ellipsoid or fusiform-ovoid and slightly beaked, or sub-globose. Leaves terminal, equally pinnatisect; pinnæ linear or acuminate, unequally truncate, the margins thickened. Only two species are at present grown in gardens. For culture, *see* **Kentia.**

V. Canterburyana (Canterbury's). A synonym of *Hedyscepe Canterburyana*.

FIG. 153. VEITCHIA JOHANNIS.

V. Johannis (John Veitch's).* *fl.* minute; spadix much branched, the branches forming large bunches. *fr.* at first green, at length bright orange, red at base, ovoid-ellipsoid. *l.*, pinnæ minutely toothed, the midrib terminating in a small curve, the apex obliquely truncate. Fiji, 1868. "Seedlings have, from the first, a straight stem, their sheath, petiole, and rachis being of a dark blood-colour, and covered when young with a grey tomentum, which is interspersed with lancet-shaped, thin, dark red lepida" (Wendland, in Seemann's "Flora Vitiensis"). See Fig. 153. SYN. *Kentia Joannis*.

V. Storckii (Storck's). *fl.*, spadix resembling that of *Cocos nucifera*, much and repeatedly branched; principal branches triangular, the lower ones having as many as twelve branchlets. *fr.* ellipsoid, with a slender, blunt taper. *l.*, pinnæ coriaceous, glabrous on both sides, much folded towards the base, and furnished with three prominent, longitudinal ribs, the two lateral ones of which are close to the margins. Trunk hard and smooth, dark brown below, light brown above. *h.* 40ft. Fiji. SYNS. *Kentia elegans* (of gardens), *K. Storckii*.

VEITCHIA (of Lindley). Included under **Picea** (which *see*).

VELAGA. A synonym of **Pterospermum** (which *see*).

VELANI OAK. *See* **Quercus Ægilops.**

VELASQUEZIA. A synonym of **Triplaris** (which *see*).

VELEZIA (named in honour of Franc. Velez de Arciniega, a Spanish writer on medicinal botany). ORD. *Caryophylleæ*. A genus embracing four species of hardy, annual herbs, inhabiting the Mediterranean region and Western Asia. Flowers sub-sessile, solitary in the axils or clustered at the tips of the branchlets; calyx acutely five-toothed; petals five, inconspicuous. Leaves subulate. Two of the species have been introduced, but they possess no horticultural value.

VELLA (of uncertain derivation, said to be Latinised from *Veler*, a Celtic name for such a plant). ORD. *Cruciferæ*. A small genus (three species) of small, much-branched, greenhouse or half-hardy shrubs, natives of Spain. Flowers yellow, rather large, sub-spicate, the lower ones bracteate; sepals erect, equal at base. Leaves entire. *V. Pseudo-cytisus*, the only species calling for mention here, is sometimes grown as a greenhouse plant, but is sufficiently hardy to endure the winter if planted in a dry, warm, south border. It may be multiplied by young cuttings, inserted in sand, under a glass.

V. Pseudo-cytisus (False Cytisus). Cress Rocket. *fl.*, petals yellow, with long, dark purple claws; pedicels very short. April and May. *l.* alternate, obovate, entire, rough with hairs. *h.* 2ft. to 3ft. 1759. (B. R. 293.)

VELLEIA (named after Major Velley, who was greatly interested in *Algæ*; he died in 1806). Including *Euthales*. ORD. *Goodenovieæ*. An Australian genus embracing eleven species of greenhouse, perennial herbs, having (except *V. macrophylla*) a short, thick stock and radical leaves. Flowers yellow, like those of *Goodenia*, but the calyx is free from the ovary; scapes (or peduncles in *V. macrophylla*) erect or ascending, di- or trichotomously branched, many-flowered; bracts opposite, free or connate. Four of the species are known to cultivation, and require similar treatment to that recommended for **Goodenia.**

V. lyrata (lyrate-leaved). *fl.*, sepals three; corolla about ½in. long, the lobes broadly winged; scapes 6in. to 12in. high, dichotomous, with spreading branches. April. *l.* oblong-spathulate, deeply toothed below the middle or lyrate-pinnatifid, often several inches long. 1819. (B. R. 551; H. E. F. 24.)

V. macrophylla (large-leaved). *fl.* in large, loose, dichotomous panicles; peduncles axillary. July. *l.*, cauline ones usually 2in. to 6in. long, toothed and narrowed into a rather long petiole. Stem erect, leafy, branching 3ft. to 4ft. high. 1839. Closely allied to the larger forms of *V. trinervis*. SYN. *Euthales macrophylla* (B. 209; B. R. 1841, 3.)

V. paradoxa (paradoxical). *fl.*, sepals five, free; corolla pubescent outside, sometimes spurred; scapes 6in. to 18in. high, di- or trichotomously branched. July. *l.* petiolate, from broadly ovate and under 2in., to narrow-oblong and above 4in. long, coarsely toothed or almost entire, sometimes quite entire. 1824. (B. R. 971.)

V. trinervis (three-nerved). *fl.*, calyx campanulate, with five unequal lobes; corolla five to six lines long, the lobes all broadly winged; scapes dichotomous, low and ascending or above 1ft. high. July. *l.* on long petioles, broadly or narrowly oblong, entire or remotely toothed. 1803. SYNS. *Goodenia tenella* (A. B. R. 446; B. M. 1137), *Euthales trinervis*.

VELLOZIA (called after a Portuguese naturalist named Velloz, who edited the works of Vandelli on Brazil).

Vellozia—*continued.*

SYN. *Xerophyta.* ORD. *Amaryllideæ.* A genus comprising about fifty species of stove and greenhouse plants, with fibrous, woody, erect, sometimes arborescent stems, natives of tropical and South Africa, Madagascar, and Brazil. Flowers white, sulphur-coloured, violet, orange-red, or blue, often showy; perianth campanulate or funnel-shaped, with scarcely any tube, the segments equal and erecto-patent, ovate, oblong, or long-acuminate at

Vellozia—*continued.*

base; stamens six, sometimes indefinite and collected in clusters; peduncles terminal, one-flowered. Leaves clustered at the tips of the branches, sometimes short, narrow, and straight, sometimes elongated, narrowly or broadly linear, rigid, often sharp. The best-known species are here described. They thrive in a compost of well-drained, sandy peat, and must not be over-watered. Propagation may be effected by seeds, or by suckers.

FIG. 154. VELLOZIA RETINERVIS.

Vellozia—*continued.*

V. candida (white). *fl.*, perianth pure white, very beautiful; stamens eighteen, in six bundles; peduncle elongated, above, as well as the ovary and perianth, scabrid-glandular. Summer. *l.* linear, grass-like, filiform-acuminate, rigidly keeled, remotely spinulose-serrated on the margins. Branches short, leafy at apex. Brazil, 1865. A very handsome, tufted, stove plant. (B. M. 5514.)

V. elegans (elegant). *fl.*, perianth pale lilac in bud, then pure white, 1¼in. across, the segments spreading; peduncle terminal, sheathed at base, divided into three to five slender pedicels 2in. to 6in. long. May. *l.* tristichous, recurved, 4in. to 8in. long, linear-lanceolate, acuminate, sharply keeled, serrated towards the apex. Stem rigid, flexuous, 6in. high. Natal, 1866. Greenhouse. (B. M. 5803.) SYN. *Talbotia elegans.*

V. retinervis (net-veined). *fl.*, perianth blue, 1½in. in diameter, the segments 1¼in. to 1½in. long, three to four lines broad, naked outside; anthers ½in. long, nearly sessile; peduncles dark-coloured above, with a few bristles below the oblong ovary, which is densely clothed with ascending, brown bristles. *l.* long-linear, recurved, rigid, glabrous. Trunk 12ft. high, crowned with a tuft of leaves. Natal and Transvaal, 1877. Greenhouse. See Fig. 154. SYN. *Xerophyta retinervis* (G. C. n. s., vi., p. 837; R. G. 903).

V. squamata (scaly). *fl.*, perianth of a fine orange-red, the tube slightly enlarged upwards, the segments moderately spreading; scape longer than the leaves. Summer. *l.* terminal, 4in. to 6in. long, spreading, glaucous, linear, acuminate, keeled. Stem short, dichotomous, clothed with the scale-like remains of fallen leaves. Organ Mountains, 1841. Stove. SYN. *Barbacenia squamata* (B. M. 4136; P. M. B. xi. 75).

VELLOZIEÆ. A tribe of *Amaryllideæ.*

VELTHEIMIA (named in honour of Aug. Ferd., Count Veltheim, 1741-1801, a German supporter of botanical studies). ORD. *Liliaceæ.* A small genus (three species) of greenhouse or half-hardy, bulbous plants, confined to South Africa. Flowers showy, densely clustered in a terminal spike or raceme, shortly pedicellate or subsessile, pendulous or nodding; perianth tubular, cylindrical, equal or slightly enlarged above, persistent, the six lobes equal, very short, tooth-like; stamens six, equally affixed above the middle of the tube, included; scape simple, leafless; bracts scarious, short. Leaves radical, numerous, oblong or loriform, fleshy-herbaceous. The two species known to cultivation thrive in a light, loamy soil. Propagation may be readily effected by offsets; or leaves, pulled off close to the bulb, and inserted in pots of soil, will produce bulbs at their base.

V. glauca (glaucous). *fl.*, perianth red-spotted or yellowish, ½in. to ¾in. long; pedicels scarcely above one line long; raceme 2in. to 6in. long, 1½in. to 2in. thick; scape 1ft. or more high; bracts linear, three to four lines long. March. *l.* narrower than in *V. viridifolia*, glaucous, much undulated. 1781. (B. M. 1091.) A variety *rubescens* (reddish-flowered) is figured in B. M. 3456.

FIG. 155. VELTHEIMIA VIRIDIFOLIA, showing Habit and detached Raceme.

V. viridifolia (green-leaved). *fl.*, perianth reddish or yellowish, spotted, 1¼in. to 1½in. long; pedicels two to three lines long; raceme 3in. to 4in. long, 3in. thick, forty to sixty-flowered; scapes 1ft. to 1½ft. long; bracts lanceolate, four to six lines long. August. *l.* ten to twelve, lorate, 8in. to 12in. long, 2½in. to 3in. broad, green, the margins undulated. 1768. See Fig. 155. (L. B. C. 1245.) SYN. *Aletris capensis* (B. M. 501).

VELUTINOUS. Velvety; coated with soft, fine close, silky pubescence.

VELVET FLOWER. A common name for **Amaranthus caudatus** (which *see*).

VELVET LEAF. A common name for *Cissampelos Pareira* and *Lavatera arborea.*

VENANA. A synonym of **Brexia** (which *see*).

VENATION. The arrangement of veins.

VENEER GRAFTING. *See* **Grafting.**

VENIDIUM (no explanation of name given by its author). SYN. *Cleitria.* ORD. *Compositæ.* A genus comprising eighteen species of greenhouse or half-hardy, cano-tomentose or woolly, perennial herbs, confined to South Africa. Flower-heads rather large, on long peduncles; involucral bracts imbricated in many series; ray florets ligulate, entire or scarcely toothed. Leaves alternate, entire, sinuate-toothed, or pinnately dissected. For culture, *see* **Arctotis.**

FIG. 156. VENIDIUM CALENDULACEUM.

V. calendulaceum (Marigold-like). *fl.-heads* somewhat like those of the Pot Marigold; ray bright clear yellow; disk dark brown, nearly black. July to October. *l.* green, glabrous above, covered with a white-cottony felt beneath. *h.* 6in. to 12in. This is regarded, by Harvey and Sonder, as a variety of *V. decurrens.* See Fig. 156.

VENOSE. Veiny; having many branched veins.

VENTENATIA (of Smith). A synonym of **Stylidium** (which *see*).

VENTILAGO (from *ventilo*, to be exposed to the wind; alluding to the linear wings at the upper part of the fruit). ORD. *Rhamneæ.* A genus consisting of about ten species of stove, climbing shrubs, scattered over the tropics. Flowers small, in axillary and terminal (usually leafless) panicles, rarely in the axils; calyx with five spreading lobes; petals five, obtriangular or cucullate; stamens five. Leaves alternate, sub-bifarious. Only one species has been introduced. For culture, *see* **Berchemia.**

V. madraspatana (probably a native name). *fl.* green, in slender, simple or paniculate spikes. June. *l.* 2in. to 4in. long, oblong-lanceolate to ovate, acute or sub-acuminate, crenate or entire. Young branches (and leaves) glabrous or only slightly pubescent. India, 1822.

VENTILATION. Ventilation, or air-giving, is one of the most important operations in garden management, and the cultivation of all kinds of trees and plants under glass. Ventilators are requisite in all horticultural structures, for the purpose of regulating temperatures, and affording an interchange of air in their interiors. The amount of space made available for opening to admit air, depends on the kind of plants cultivated in any particular structure, as, for instance, conservatories and greenhouses. Peach houses and vineries need provision for the admission of an abundant circulation of air whenever it is required, or when circumstances and weather permit; while in plant stoves and houses in which the occupants need a more or less tropical atmosphere at all times, a smaller number of ventilators will suffice. It is always advisable to have some plan of giving Ventilation at, or near, the top: this is provided in most houses of modern construction, so that the least supply, or nearly the full amount, of air may be admitted without rain getting in, except from an occasional splashing. Ventilating gearing has been greatly improved during recent years, so that either top or bottom sashes along a house, say 30ft. long, may be easily opened or closed with one hand, working a lever, and the sashes may be fixed with the other hand to wherever they are required to remain. Where there are no side or front sashes, as in many lean-to houses, wooden door ventilators are best, fixed in the front wall; and if the air from these can be made to pass over the hot-water pipes, it will become warmed before reaching the plants. Wooden ventilators may be similarly placed in a back wall; but wherever convenient, lifting sashes are preferable.

There are numerous details attending the admission of air which depend on widely varied circumstances, and can only be learnt by practical experience; the state of the weather, which is often very changeable, and the difference between outside and inside temperatures, being, perhaps, the most important points to consider. At different seasons, too, the same plants will need very dissimilar treatment according to their stages of growth. During spring, the greatest care is necessary regarding the admission of air, as sudden changes of temperature, caused by improper Ventilation, quickly show their evil effects on young and tender foliage. In old-fashioned houses, with small panes of glass, the sun never has the same effect in raising the temperature inside, as in most of those of modern construction with large panes; hence the necessity of early attention to Ventilation becomes much greater with the last-named. Happily, many of the improved systems of applying air, as already referred to, afford the means of opening or closing the ventilators in a tenth part of the time occupied in handling each sash separately in a large house. In daily management, when it is known that air will have to be admitted to a house, the ventilators should be opened very gradually so soon as the temperature begins to rise in the morning or early part of the day. It is never good practice to allow the temperature to get high and then put on what air is required for the day at once, or even at twice. Under such management tender foliage often droops quickly because of a sudden change and excessive evaporation taking place. Few plants or trees are able to withstand this: their leaves often become scorched during the day, and the attacks of insects are much encouraged. In spring, the ventilating of forcing-houses and other structures may require somewhat different management nearly every day in order to keep near the requisite degree of heat. The quantity of air and the mode of applying it are, therefore, matters which must be determined in dealing with the culture of plants under such varied circumstances. What may be called general advice is to begin ventilating early, as already noted, when it is pretty certain that airing will be necessary,

Ventilation—*continued.*

and apply a little more at frequent intervals until sufficient for the day is put on. Secondly, draughts should always be avoided: if the air is cold or the wind rough, never open ventilators at the front and back parts of a house at the same time, unless the occupants are such as take no harm—and this is seldom the case. In summer, when the inside and outside temperatures are much more uniform than at other seasons, air may generally be most freely admitted without causing much injury.

VENTRAL. Belonging to the anterior or inner surface of a carpel; opposed to dorsal.

VENTRICOSE. Swelling unequally, or inflated on one side; *e.g.*, the corolla of many labiate and personate plants.

VENTRICULOSE. Abounding with veinlets.

VENUS' BASIN. An old name for *Dipsacus sylvestris.*

VENUS' FLY-TRAP. *See* **Dionæa muscipula.**

VENUS' GOLDEN APPLE. A common name for **Atalantia monophylla** (which *see*).

VENUS' HAIR. A common name for **Adiantum Capillus-Veneris** (which *see*).

VENUS' LOOKING-GLASS. A popular name for **Specularia Speculum** (which *see*).

VENUS' NAVELWORT. *See* **Omphalodes linifolia.**

VENUS' OR VENICE SUMACH. A common name for **Rhus Cotinus** (which *see*).

VEPRIS. Included under **Toddalia** (which *see*).

VERATAXUS. A synonym of **Taxus** (which *see*).

VERATRUM (the old Latin name, used by Lucretius and Pliny, from *vere*, truly, and *ater*, black; alluding to the colour of the root). False or White Hellebore. ORD. *Liliaceæ.* A genus embracing eight or nine species of hardy, perennial herbs, inhabiting Europe, Russian Asia, and North America. Flowers numerous in a terminal panicle, shortly pedicellate; perianth purplish, greenish, or whitish, persistent, broadly campanulate or explanate; segments (in hermaphrodite flowers) connate towards the base in a very short tube, in others oblong, spreading, subequal, scarcely contracted at base, many-nerved; stamens six. Leaves often broad, plicate-veined, contracted in an ample sheath, the upper ones rarely all narrow; floral ones bract-like. Stem erect, leafy. Rhizome thick (very poisonous), the root-fibres somewhat poisonous. The best-known species are here described. Gardeners make use of *V. album*, powdered, to destroy caterpillars. Veratrums thrive in any rich soil. Propagation may be effected by divisions, or by seeds.

V. album (white).* Langwort; Lyngwort. *fl.*, perianth whitish within, greenish outside at base, spreading, ⅓in. to ½in. long, the segments crisped-denticulate; pedicels very short or almost wanting; racemes dense, the rachis pubescent; panicle 1ft. to 2ft. long. July. *l.* rather firm, plicate, puberulous beneath; radical ones oblong, 1ft. long, 5in. to 6in. broad. Stem puberulous, with ten to twelve leaves. *h.* 3ft. to 4ft. Europe and Siberia, 1548. (F. D. 1120; J. F. A. 335.) The following, formerly classed as species, are regarded, by Baker, as mere varieties:

V. a. Lobelianum (Lobel's). *fl.*, perianth wholly greenish, the segments narrower than in the type; lateral racemes dense, erecto-patent. 1818.

V. a. viride (green). *fl.*, perianth greenish, the segments lanceolate, acute; lower pedicels two to three lines long; lateral racemes loose-flowered, often reflexed. North America, 1742. SYN. *Helonias viridis* (B. M. 1096).

V. Maackii (Maack's). *fl.*, perianth dark-purple, ⅓in. to ¼in. long, the segments oblong, blackish at base; lower pedicels three to four lines long; lateral racemes ascending; panicle very loose, 6in. to 12in. long. Summer. *l.*, lower ones lanceolate, 6in. long,

Veratrum—*continued.*

lin. broad in the middle, distinctly petiolate; upper cauline ones sessile. Stem slender, 2ft. high, few-leaved, slightly thickened at base. Eastern Siberia, 1883. (R. G. 1070.)

FIG. 157. VERATRUM NIGRUM.

V. nigrum (black).* *fl.*, perianth blackish-purple, two to three lines long, the segments oblong, obtuse; lower pedicels one to three lines long; racemes dense-flowered, the lateral ones short; panicle narrow, 1ft. to 3ft. long. June. *l.*, lower ones oblong,

FIG. 158. PORTION OF INFLORESCENCE OF VERATRUM NIGRUM.

1ft. long, 6in. to 8in. broad, narrowed at base, plicate. Stem erect, 2ft. to 3ft. high, many-leaved, slightly bulbous at base. Central Europe, 1596. See Figs. 157 and 158. (B. M. 963; J. F. A. 336.)

VERBASCEÆ. A tribe of *Scrophularineæ.*

VERBASCUM (the old Latin name used by Pliny). Mullein. ORD. *Scrophularineæ.* A genus embracing nearly 100 species of mostly hardy, biennial herbs, rarely perennials or sub-shrubs, more or less tomentose or floccose-woolly, inhabiting Europe, North Africa, and West and Central Asia. Flowers yellow, fuscous, purple, or red, rarely white, on usually very short and ebracteolate pedicels, spicate or racemose; calyx deeply five-cleft or parted, rarely shortly five-toothed; corolla tube scarcely any, the lobes five, broad, nearly equal; stamens five, affixed at the base of the corolla. Leaves all alternate, often soft, entire,

Verbascum—*continued.*

FIG. 159. UPPER PORTION OF PLANT OF VERBASCUM PHŒNICEUM.

crenulate, sinuate-toothed, or pinnatifid. Few of the species are sufficiently beautiful to claim a place in our gardens. The British Flora embraces five species, *V. Blattaria*, *V. Lychnitis*, *V. nigrum*, *V. pulverulentum*, and *V. Thapsus*. A selection of the most desirable kinds is here given. With the exception of *V. nigrum* and *V. pinnatifidum*, which may be increased by divisions and cuttings respectively, all are hardy biennials, and only require sowing in any ordinary soil.

V. bipinnatifidum (bipinnatifid). A synonym of *V. pinnatifidum.*

V. Blattaria (Blattaria). Moth Mullein. *fl.* bright yellow, rarely cream-coloured, ¾in. to 1¼in. in diameter; panicles slender, glandular; peduncles ¼in. to 1in. long. *l.*, radical ones 4in. to 10in. long, oblong-lanceolate, obtuse, crenate, lobulate, or sub-pinnatifid; cauline ones small, sessile, ovate or oblong, toothed or sub-crenate. Stem 8in. to 4ft. high, simple or branched. Europe (Britain). (Sy. En. B. 942.)

V. Boerhaavii (Boerhaave's). Annual Mullein. *fl.* yellow, sessile, fascicled or rarely solitary; corolla ample; raceme simple or rarely slightly branched. *l.* crenate, woolly; lower ones petiolate, obovate or oblong; upper ones cordate-amplexicaul, rarely very shortly sub-decurrent, acute or long-acuminate. *h.* 2ft. South Europe, 1731. A pretty species.

Verbascum—*continued.*

V. Chaixii (Chaix's).* Nettle-leaved Mullein. *fl.* yellow; calyx segments lanceolate, subulate; fascicles loosely many-flowered; raceme paniculate. *l.* green or tomentose beneath, crenate; lower ones petiolate, cuneate at base, truncate or incised; upper ones sessile, rounded at base. *h.* 3ft. South and Central Europe, 1831.

V. cupreum (coppery). A hybrid between *V. ovalifolium* and *V. phœniceum*.

V. ferrugineum (rusty). A synonym of *V. phœniceum*.

V. formosum (beautiful). A synonym of *V. ovalifolium*.

V. Myconi (Mycon's). A synonym of *Ramondia pyrenaica*.

V. nigrum (dark). Dark Mullein. *fl.* numerous within each bract, more or less stalked; corolla yellow, with bright purple hairs to the filaments. Summer and autumn. *l.* crenate, nearly glabrous on the upper side, slightly woolly beneath; lower ones large, cordate-oblong, on long stalks; upper ones nearly sessile, small, and pointed. Stem sparingly clothed with woolly hairs, 2ft. to 3ft. high, ending in a long, simply-branched raceme. Europe (Britain), Western Asia. A pretty perennial.

V. olympicum (Olympian).* *fl.* bright golden-yellow, 1in. to 1½in. in diameter. *l.* rosulate, broad, lanceolate, acuminate, woolly. Stem 5ft. to 6ft. high, branched from near the base in a candelabra-like manner. Levant, 1883. Perennial. (R. G. 1078.)

V. ovalifolium (oval-leaved). *fl.* orange, large, solitary, disposed in a simple or dense spike; upper filaments orange- or purple-woolly. *l.* ovate; lower ones doubly or incised-crenate; upper ones cordate-amplexicaul. *h.* 1ft. Tauria, 1804. (B. M. 1037.) SYN. *V. formosum* (B. R. 558). *V. cupreum* (B. M. 1226) is a hybrid between this species and *V. phœniceum*.

V. phlomoides (Phlomis-like). Woolly Mullein. *fl.* yellow, fascicled; pedicels shorter than the calyx; racemes sub-solitary, elongated. *l.* crenulate, or the oblong radical ones doubly or sub-incised crenate; upper ones short, obtuse, or the intermediate ones somewhat angular-decurrent. *h.* 3ft. South Europe, 1739. (S. F. G. 224.)

V. phœniceum (violet).* *fl.* violet or red, rather large; pedicels solitary, remote, many times longer than the calyx; raceme glandular-pilose, simple or slightly branched. *l.* glabrous above, pubescent beneath; radical ones petiolate, ovate or oblong, entire or grossly crenate; cauline ones few, small. *h.* 3ft. South Europe, 1796. See Fig. 159. (B. M. 885; L. B. C. 637; R. G. 436, f. 2.) SYN. *V. ferrugineum* (A. B. R. 163).

FIG. 160. PORTION OF INFLORESCENCE OF VERBASCUM THAPSUS.

V. pinnatifidum (pinnatifid). *fl.* yellow, in remote, few-flowered fascicles, sometimes sub-solitary; raceme slightly branched, rigid. *l.* mostly naked, green; radical ones bipinnatifid; cauline ones pinnatifid, with oblong, toothed segments; upper ones serrated or pinnatifid. Stems 1ft. or more high. Tauria, &c., 1813. Sub-shrub. (S. F. G. 228.) SYN. *V. bipinnatifidum* (B. M. 1777).

V. pyramidatum (pyramidal-flowered). *fl.* yellow; panicle pyramidal, canescent, 1ft. to 2ft. long, with short, bundle-flowered branchlets (or, in gardens, an often elongated raceme). *l.* doubly crenate; lower ones ample, long-narrowed to the base; upper ones sessile, cordate-auriculate. *h.* 3ft. or more. Caucasus, 1804. A pretty species. (S. B. F. G. 31.)

V. rubiginosum (reddish-brown). *fl.* yellow and red; pedicels bi- or ternate, rarely solitary, twice or many times as long as the calyx; raceme loose, branched, sub-paniculate. *l.* pubescent beneath, crenate; lower ones petiolate; upper ones sessile or cordate-amplexicaul. *h.* 2ft. Hungary, 1817.

V. r. tauricum (Taurian). *fl.* larger, on shorter pedicels; raceme simpler. (B. M. 3799, under name of *V. tauricum*.)

V. speciosum (showy). *fl.* yellow; pedicels longer than the calyx; fascicles loose, often many-flowered; panicles very long, branched. *l.* thick, entire, or the lower ones crenate, oblong, elongated, long-narrowed into the petioles; upper ones sessile or cordate-amplexicaul. *h.* 6ft. Hungary, 1818.

V. spectabile (remarkable). *fl.* yellow and purple; pedicels solitary or few together; raceme elongated, nearly simple, viscous-villous. *l.* doubly crenate, glabrous or pilose above, slightly tomentose beneath; lower ones petiolate, oblong-ovate, cordate at base; upper ones sessile, semi-amplexicaul. *h.* 2ft. Tauria, 1820.

V. Thapsus (Thapsus in Africa). Aaron's Rod; Adam's Flannel; Blanket Leaf; Cow's Lungwort; Hag or Hig Taper; Jacob's Staff; Shepherd's Club; Torches, &c. *fl.* yellow; corolla ⅓in. to 1in. in diameter, woolly outside; spike 6in. to 10in. long, dense, simple. *l.* very decurrent; radical ones 6in. to 8in. long, obovate-lanceolate, entire or crenate; cauline ones oblong, acute, the upper acuminate. Stem 2ft. to 3ft. high, stout. Europe (Britain). See Fig. 160. (F. D. 631; Sy. En. B. 937.)

VERBENA (the old Latin name used by Virgil and Pliny). Vervain. ORD. *Verbenaceæ*. A genus comprising about eighty species of greenhouse or hardy, annual or perennial herbs or sub-shrubs, almost wholly American. Flowers small or mediocre, solitary in the axils of the often narrow bracts; calyx tubular, five-ribbed, five-toothed; corolla tube straight or incurved, equal or slightly enlarged above; limb spreading, sub-bilabiate, the five lobes oblong or broad, obtuse or retuse; stamens four, didynamous, very rarely two, affixed above the middle of the tube, included; spikes terminal, rarely axillary. Leaves opposite, or rarely ternately whorled or alternate, toothed or often incised or dissected, rarely entire. *V. officinalis*, the British representative of the genus, was formerly held in great repute as a remedy for affections of the bladder, and its flowers were considered an instrument for restoring defective vision. Verbenas may readily be propagated by seeds, sown in heat, some time in early spring; or by cuttings of the young growths which have no flowers on them. The hardy species may also be increased by division of the rootstock. All require a rich soil, and may be planted in open borders during summer from the middle or end of May.

The best-known species are here described. Except where otherwise indicated, they are perennials, and flower in summer.

V. alata (winged). *fl.* rosy; spikes short, dense, sub-cylindric; panicle terminal, cymose, sub-fastigiate. *l.* sessile, ⅛in. to 1in. long, ovate or triangular-oblong, acute, entire or argutely serrated, three-nerved, wrinkled, strigose-scabrous. Stems sub-fastigiate. *h.* 4ft. Brazil, 1828. Half-hardy. (S. B. F. G. ser. ii. 41.)

V. amœna (pleasing). *fl.* pinkish-purple; corolla lobes bifid; spikes long, dense, erect. *l.* stipulate, pinnatifid; lobes oblong, acute, clothed with closely-pressed pubescence; stipules much more hairy than the blade. Stems partially recumbent, covered with stiff, whitish hairs. *h.* 1ft. Mexico. Half-hardy. (P. M. B. vii. 3.)

V. Aubletia (Aublet's). Rose Vervain. *fl.* reddish-purple or lilac, rarely white; corolla limb ½in. to ⅝in. broad; spikes pedunculate, elongated in fruit. *l.* 1in. to 2in. long, ovate or ovate-oblong, incisely lobed and toothed, often more deeply three-cleft, the truncate or broadly cuneate base tapering into a margined petiole. *h.* 1ft. or less. North America, 1774. Hardy. (B. M. 308; B. R. 294, var. 1925). *V. Lambertii* (B. M. 2200) is a form of this with narrower and more incised leaves. *V. L. rosea* (S. B. F. G. ser. ii. 363) has a light-coloured, fragrant corolla, ⅜in. wide.

V. bracteosa (conspicuous-bracted). *fl.* purplish or blue, very small, exceeded by some of the leafy bracts; spikes thick, terminal. *l.* cuneate-oblong or cuneate-obovate, mostly narrowed into a short-margined petiole, pinnately incised or three-cleft, and coarsely-toothed. North America, 1820. Plant diffuse or decumbent, hirsute, annual or becoming perennial at base. Hardy. (B. M. 2910.)

Verbena—*continued.*

V. chamædrifolia (Chamædrys-leaved). *fl.* of a splendid scarlet colour, large and showy; spike solitary, on an elongated, ascending peduncle. *l.* oblong or ovate, broadly cuneate at base, crenate or somewhat incised-serrated, strigose above, hairy beneath, on short petioles. Stems filiform, fork-branched, creeping. Brazil, 1827. Half-hardy under-shrub. (B. 129; B. M. 3333; S. B. F. G. ser. ii. 9.) SYN. *V. melissoides.*

V. c. Melindres (vernacular name). *l.* oblong or oblong-lanceolate, unequally incised-serrated and less hairy. (P. M. B. i. 173; B. R. 1184 and L. B. C. 1514, under name of *V. Melindres.*)

V. elegans (elegant). *fl.* blue; corolla limb large, with emarginate lobes; spikes terminal, pedunculate, pyramidal. *l.* shortly petiolate, pinnatifid-laciniate, cuneate at base, slightly strigose-hispid; segments entire, linear-oblong, the margins slightly revolute. Stems branched, procumbent. Mexico, 1826. Hardy annual.

V. erinoides (Erinus-like). *fl.* reddish-violet; corolla shortly exserted; spikes terminal, pedunculate, solitary, elongated, fastigiate, canescent-hairy. *l.* cuneate at base, decurrent, tripartite-pinnatifid or laciniate; laciniæ lanceolate, slightly acute, entire or somewhat toothed, the margins slightly revolute. Stems hairy, much-branched, decumbent, rooting; branches ascending. Peru, 1818. Hardy annual. SYN. *V. multifida.*

V. e. contracta (contracted). *l.* tripartite; laciniæ incised-pinnatifid; ultimate segments linear-oblong, acute. (B. R. 1766, under name of *V. multifida contracta*; S. B. F. G. ser. ii. 347, under name of *V. e. Sabini.*)

V. hastata (spear-shaped). Blue Vervain; Simpler's Joy; Wild Hyssop. *fl.* blue; spikes dense, strict, naked at base, or more or less pedunculate, numerous in a panicle. *l.* oblong-lanceolate, gradually acuminate, coarsely or incisely serrated, petiolate; some of the lower ones often hastately three-lobed at base. Stem erect, 3ft. to 6ft. high. North America, 1810. Hardy. *V. paniculata* (B. R. 1102) is a form wanting the three-lobed leaves.

FIG. 161. FLOWERING BRANCH OF VERBENA INCISA.

V. incisa (cut). *fl.* rosy-purple; calyx five lines long; spikes pedunculate, sub-ternate at the tips of the branches, corymbose-paniculate. *l.*, lower ones oblong-triangular, cuneate, truncate or sub-cordate at base, attenuated into the petioles, pinnatifid-lobed, deeply incised-serrated, wrinkled; upper ones nearly lanceolate, sessile, incised-pinnatifid. Stem ascending; branches erect. *h.* 2ft. Brazil, 1826. Greenhouse sub-shrub. See Fig. 161. (B. M. 3628.)

V. Lambertii (Lambert's). A form of *V. Aubletia.*

V. Melindres (vernacular name). A variety of *V. chamædrifolia.*

V. melissoides (Melissa-like). A synonym of *V. chamædrifolia.*

V. multifida (much-cleft). A synonym of *V. erinoides.*

V. mutabilis (changeable). A synonym of *Stachytarpheta mutabilis.*

Verbena—*continued.*

V. officinalis (officinal). Common Vervain; Holy Herb; Juno's Tears; Pigeon's Grass; Simpler's Joy. *fl.* lilac, ⅛in. in diameter; spikes dense-flowered, afterwards elongating. *l.* opposite, oblong, pinnatifid or tripartite, with acute or obtuse lobes; upper ones narrower. Stems 1ft. to 2ft. high, rigid, branched above. Europe (Britain). Plant hispid-pubescent. (F. D. 628; Sy. En. B. 1018.) SYN. *V. sororia* (S. B. F. G. 202).

V. paniculata (panicled). A form of *V. hastata.*

V. phlogiflora (flame-flowered). *fl.* purple or lilac (varying in cultivation to red and blue); corolla eight to nine lines long; spikes terminal, pedunculate, solitary or ternate, cymose-paniculate. *l.* oblong- or lanceolate-triangular, acute, cuneate at base, entire, long-attenuated into the petioles, incised-serrated, wrinkled, strigose above, hairy beneath, the margins slightly revolute. Stems ascending; branches erect. *h.* 1½ft. Brazil, 1834. Greenhouse sub-shrub.

V. p. vulgaris (common). *fl.* in solitary, terminal spikes. Stems slender, decumbent; branches much-spreading, diffuse, ascending-erect. (B. 60; B. M. 3541, P. M. B. iv. 5, and S. B. F. G. ii. 391, under name of *V. Tweediana.*)

V. pulchella (pretty). A synonym of *V. tenera.*

V. radicans (rooting). *fl.* lilac, fragrant; corolla twice as long as the pubescent calyx; spikes short, sub-capitate. *l.* trifid; segments mostly again trifid, the laciniæ oblong-linear, slightly fleshy, highly glabrous. Stems procumbent, rooting. Andes, 1832. Greenhouse sub-shrub.

V. rugosa (wrinkled). A synonym of *V. venosa.*

V. sororia (sisterly). A synonym of *V. officinalis.*

V. stricta (straight). *fl.* blue; corolla four to five lines long; spikes comparatively thick, dense, canescent, mostly sessile, or leafy-bracted at base. *l.* nearly sessile, ovate or oblong, very sharply and densely, mostly doubly serrated, rarely incised, cinereous with dense, soft, hirsute-villous pubescence, rugose-veiny. *h.* 1ft. to 2ft. North America. Hardy. (B. M. 1976.)

V. sulphurea (sulphur-coloured). *fl.* pale sulphur-coloured; corolla limb rather large; spikes pedunculate, capitate, many-flowered. *l.* pinnatipartite or nearly so, petiolate, strigose-hispidulous on both sides; laciniæ much spreading, linear, obtuse, revolute. Stems procumbent; branches ascending or erect. *h.* about 2ft. Chili, 1832. Greenhouse, hairy sub-shrub. (B. R. 1748; S. B. F. G. ser. ii. 221.)

V. tenera (tender). *fl.* violet; corolla tube twice as long as the calyx; spikes terminal, pedunculate, solitary or ternate, fastigiate, at length elongated and relaxed, slightly canescent. *l.* decurrent in short petioles, laciniate-pinnatifid; segments linear, slightly acute, entire, the margins somewhat revolute. Branches ascending. Brazil, 1827. A much-branched, creeping, greenhouse sub-shrub. SYN. *V. pulchella* (S. B. F. G. 295).

V. t. Maonetti (Maonette). *fl.* of a pleasing reddish-violet; corolla segments white-margined. (B. H. 1870, 6; F. d. S. 1129; R. G. 142, f. 1.)

V. teucrioides (Teucrium-like). *fl.* white or pinkish; calyx ¼in. long; corolla large, sweet-scented at night; spikes terminal, solitary, glandular-hairy. *l.* ovate or oblong-triangular, shortly cuneate at base, entire, shortly narrowed into the petioles, obtuse, somewhat sinuate-serrated, much wrinkled, the margins revolute, hairy above, tomentose beneath. Stems tufted, rooting at base, ascending, spreading-hairy. *h.* 2ft. Brazil, 1837. Greenhouse sub-shrub. (B. M. 3694; P. M. B. v. 243.)

V. trifida (trifid-leaved). *fl.* purple; spikes terminal, many, sub-sessile, short, very dense, clustered in a head. *l.* clustered, cuneate at base, sessile, ½in. to 1in. long, strigose-hispidulous, trifid or nearly so, emitting fasciculate-leafy branchlets from the axils; segments lanceolate, acuminate, the margins revolute. Branches tetragonal, and, as well as the spikes, hairy. *h.* 3ft. Mexico, 1818. A remarkable, greenhouse sub-shrub. (L. & P. F. G. i., p. 169.)

V. triphylla (three-leaved). A synonym of *Lippia citriodora.*

V. Tweediana (Tweedie's). A synonym of *V. phlogiflora vulgaris.*

V. venosa (conspicuous-veined).* *fl.* lilac or bluish; corolla tube slender, thrice as long as the calyx; terminal spikes sub-ternate, lateral ones pedunculate, fastigiate, at length cylindrical, imbricated. *l.* approximating, rigid, oblong, sub-cuneate, entire, semi-amplexicaul at base, adnate, acute, incised-serrated, spreading, unequal, the margins revolute, wrinkled and strigose above, hispidulous on the nerves beneath. Stems simple, ascending. *h.* 2ft. Brazil, 1830. A beautiful and well-known, half-hardy plant, very useful for bedding, particularly if mixed with a silver-leaved Pelargonium. (B. M. 3127; S. B. F. G. ser. ii. 207.) SYN. *V. rugosa* (S. B. F. G. ser. ii. 318).

V. xutha (yellow). *fl.* purple or blue, more crowded in the strict spikes and larger than in *V. officinalis.* *l.* incisely pinnatifid or laciniate, or some of the lower ones tripartite, more or less canescent; lobes deeply toothed. *h.* 2ft. to 3ft. North America, 1824. Half-hardy.

Garden Varieties. Verbenas are amongst the most beautiful of summer bedding plants when they can be induced to succeed; but, unfortunately, of late years this

Verbena—*continued.*

has been an uncertainty, because of the plants being subject to, apparently, some kind of disease. For this reason, and also because stock plants are not, as a rule, easily preserved through the winter, many cultivators have taken to the raising of seedlings each spring for growing only through one summer. This is easily done, as the young plants grow rapidly and flower freely if the seed has been saved from a good source. Green Fly and Mildew are the greatest enemies to which the plants are subject; either of these, if allowed to remain on them, will soon work irreparable mischief. For exhibition purposes, Verbenas may be grown in pots in a cold frame. The following is a list of varieties that are best suited for bedding:

BOULE DE NEIGE, white, nicely scented. CRIMSON KING, crimson, with white eye; fine bedder. LADY LONDESBOROUGH, mauve, with white stripe. LUSTROUS, intense scarlet, with large, pure white eye; strong grower. NEMESIS, very deep pink. PURPLE KING, purple self; a good, well-known, old variety.

VERBENACEÆ. A natural order of herbs, shrubs, or trees, broadly dispersed over the warmer parts of the globe, and particularly abundant in South temperate regions. Flowers hermaphrodite or rarely, by abortion, polygamous, variously disposed; calyx inferior, persistent, the tube campanulate, tubular, or rarely almost obsolete, the teeth, lobes, or segments five, four, or rarely six to eight, or obsolete; corolla gamopetalous, the tube often incurved, the limb four or five-cleft, rarely multifid, the lobes equal or more or less bilabiate; perfect stamens four, didynamous, or two, or in a few genera as many as the corolla lobes; filaments inappendiculate; anthers two-celled; bracts variable, often small. Fruit more or less drupaceous or sub-capsular. Leaves generally opposite or whorled, entire, toothed, or incised-multifid, in one genus pinnate, in another digitately compound; stipules absent. Teak, one of the most important timbers in the world, is the wood of *Tectona grandis*. *Lippia citriodora*, and several species of *Lantana*, are used as tea. The order embraces fifty-nine genera, and nearly 700 species. Well-known examples are: *Clerodendron*, *Lantana*, *Verbena*, and *Vitex*.

VERBENA, LEMON-SCENTED. A common name for **Lippia citriodora** (which *see*).

VERBENA OIL-PLANT. A name given to **Andropogon Schœnanthus** (which *see*).

VERBENA, SAND. A common name for **Abronia** (which *see*).

VERBENA, SWEET-SCENTED. *See* **Aloysia.**

VERBESINA (altered from *Verbena*, which some of the species are supposed to resemble). Crown Beard. Including *Platypteris* and *Ximenesia*. ORD. *Compositæ*. A genus comprising about fifty species of stove, greenhouse, or hardy, annual or perennial herbs, sub-shrubs, or rarely shrubs, inhabiting the warmer parts of America. Flower-heads yellow, or the ray florets white; involucral bracts oblong or linear, in few series; receptacle convex or conical, paleaceous; ray florets ligulate, spreading,

FIG. 162 VERBESINA PINNATIFIDA.

entire or two or three-toothed; achenes glabrous or pilose. Leaves opposite or the upper ones (or all) alternate, petiolate, sessile, or decurrent, toothed, lobed, or rarely entire. Few of the species possess any horticultural value. Those described below are, with the exception of *V. encelioides*, perennials. All thrive in rich soil, and may be increased by seeds, the perennials also by divisions.

V. alata (winged). *fl.-heads* sub-globose, solitary, terminal; ray florets orange-yellow, numerous, sub-biseriate. August. *l.* alternate, long-decurrent, oblong or obovate, obtuse, undulated and sinuate-toothed, nearly glabrous. Stem winged. *h.* 2ft. West Indies, &c., 1699. Stove. (B. M. 1716.)

V. crocata (yellow). *fl.-heads* orange-yellow, solitary, globose. Summer. *l.* opposite, decurrent, irregularly pinnately lobed;

Verbesina—*continued.*

lobes oval, erose-dentate, the terminal one somewhat deltoid. Branches four-winged. *h.* 2ft. Mexico, 1812. Stove. SYNS. *Platypteris crocata*, *Spilanthes crocata* (B. M. 1627).

V. encelioides (Encelia-like). *fl.-heads* yellow, disposed in a somewhat corymbose manner; achenes of the rays wingless, three-toothed, those of the disk winged, two-awned. August. *l.* ovate or oblong, coarsely serrated; petioles broadly winged, auricled at base. Stem erect, 2ft. to 3ft. high. Mexico, 1785. A canescent, greenhouse annual. SYN. *Ximenesia encelioides.*

V. pinnatifida (pinnatifid-leaved). *fl.-heads* pale yellow; involucral scales blackish, linear-lanceolate, acute; rays about twelve, oblong; panicles opposite, branched, corymbose at apex. August. *l.* opposite, long-decurrent, pinnatifid, long-cuneate at base, hairy-puberulous on both sides, especially on the nerves. Stem four-winged, tomentose. *h.* 3ft. Mexico, 1826. Greenhouse. See Fig. 162.

V. sativa (cultivated). A synonym of *Veslingia sativa.*

V. virginica (Virginian). *fl.-heads* white, in compound corymbs; ray florets three or four, oval. August. *l.* alternate, ovate-lanceolate, feather-veined, toothed or lobed, decurrent, below, as well as the narrowly or interruptedly-winged stem, downy-pubescent. *h.* 2ft. North America, 1812. Hardy.

VEREIA. A synonym of **Kalanchoe** (which *see*).

VERGE-CUTTER. Another name for an edging-iron, a tool which is employed for cutting grass verges by the side of walks, flower-beds, &c., also for cutting out new beds in turf. The simple form with crescent-

FIG. 163. VERGE-CUTTER.

shaped blade (see Fig. 163) is the best, as it may be guided by the hand to cut in whatever direction is desired. It is unnecessary, as a rule, to use a Verge-cutter for the edges of walks more than once a year—spring is the best season—the shears being sufficient for the rest of the year. By the continued use of an edging-iron on both sides of a walk, the latter very soon becomes considerably widened.

VERMICULAR. Worm-shaped.

VERMIFUGA. A synonym of **Flaveria** (which *see*).

VERNAL. Appearing in spring.

VERNAL GRASS. The common name for **Anthoxanthum odoratum** (which *see*).

VERNATION. The disposition of the leaves within a leaf-bud.

VERNICOSE. Covered with natural varnish; appearing as if varnished.

VERNONIA (named in honour of William Vernon, a botanical traveller in North America). Ironweed. Including *Ascaricida* and *Webbia*. ORD. *Compositæ*. A vast genus (about 380 species) of stove, greenhouse, or hardy, annual or perennial herbs or shrubs, broadly distributed, chiefly

Vernonia—*continued.*

in the tropics, but most copiously in the warmer parts of America. Flower-heads purple, reddish, bluish, or rarely white, terminal, solitary, cymose, or paniculate, homogamous; involucral bracts in many series, the inner longest; receptacle naked or pitted, sometimes shortly hairy; florets all equal, tubular, slender, narrowly five-cleft; achenes striated, ribbed, or angled, rarely terete; pappus of many hairs, often girt with a row of outer short hairs or flattened bristles. Leaves alternate (or in one Brazilian species opposite), entire or toothed, penni-veined, sessile or petiolate. Few of the species are known to cultivation, the majority being mere weeds. Those described below thrive in rich, light soil, and may be readily increased by seeds, cuttings, or divisions, according to the nature of the plant.

V. acutifolia (acute-leaved). *fl.-heads* pale purple, sub-sessile at the sides of the branches; involucre hemispherical; florets forty. December. *l.* sessile, linear, acuminate, reticulate-nerved, slightly serrated, glabrous above, obscurely pilose beneath. Stem erect, terete. *h.* 4ft. South America. Greenhouse perennial. (B. M. 3062.)

V. axilliflora (axillary-flowered). *fl.-heads* violet-purple, sessile, much shorter than the floral leaves; cymes long, scorpioid, terminal. September. *l.* shortly petiolate, oblong-elliptic, acute at both ends, nearly entire, scabrous and pilose above, villous-tomentose beneath. Branches terete, villous. *h.* 1½ft. Brazil. Stove shrub. (L. B. C. 1690.)

V. Calvoana (Calvo's). *fl.-heads* white, 2in. broad, with a purple eye; involucral scales large and spreading, in many series; corymbs large, branching and spreading, bearing leafy, toothed bracts. January. *l.* sessile, oblong-lanceolate, acuminate, 8in. to 14in. long, toothed, much narrowed and unequally auricled at base. Stem stout, sulcate, branched, tomentose-pubescent. *h.* 8ft. to 12ft. Cameroons, 1861. A magnificent, stove shrub. (B. M. 5698.)

V. centriflora (centre-flowered). A synonym of *V. scorpioides.*

V. flexuosa (flexuous). *fl.-heads* purple or white; involucre campanulate, the bracts mucronate-acuminate; cymes scorpioid. September. *l.* sessile, oblong or linear-lanceolate, nearly entire, scabrous-pilose on both sides. Stem herbaceous, from a tuberous rhizome. *h.* 1½ft. Brazil, 1823. Stove. (B. M. 2477; L. B. C. 1880.)

V. noveboracensis (New York). *fl.-heads* purple; involucral scales tipped with a long, bristle or awl-shaped, spreading appendage, in some varieties merely pointed. August. *l.* lanceolate or oblong. *h.* 5ft. North America, 1710. Hardy perennial.

V. odoratissima (highly odorous). *fl.-heads* purple; involucral scales acuminate; cymes disposed in a panicle. October. *l.* shortly petiolate, rigid, obovate, cuneate at base, slightly toothed at apex, scabrid above, reticulated and hirsute-pubescent beneath. Stem terete, shrubby. *h.* 4ft. Caraccas, 1817. Stove.

V. pinifolia (Pine-leaved). *fl.-heads* bright purple; involucral scales mucronate, canescent; corymbs 3in. to 8in. across, mostly compound, of many heads, flat-topped. Summer. *l.* sessile, crowded, linear, acute, 1in. to 4in. long, half to four lines wide, becoming glabrous above, the margins revolute. Stems 1ft. to 2ft. high, mostly closely leafy throughout. South Africa, 1863. Greenhouse perennial. SYN. *Webbia pinifolia* (B. M. 5412).

V. scorpioides (scorpioid-cymed). *fl.-heads* lilac-rose, sessile, contiguous; involucral scales hairy, the inner ones acuminate, the outer ovate; cymes scorpioid, recurved, leafless, approximate. Summer. *l.* petiolate, elliptic, acute, pubescent beneath. *h.* 1ft. Brazil and West Indies, 1874. Stove shrub. (R. H. 1874, 231.) SYN. *V. centriflora.*

V. sericea (silky). *fl.-heads* purple or white, sessile, solitary or twin in the axils; involucre campanulate, the outer scales recurved, mucronate, the inner ones obtuse. December. *l.* very shortly petiolate, lanceolate, acuminate, sub-obtuse at base, sub-entire, nearly glabrous above, adpressedly pubescent beneath. Stem terete, striated, very slightly puberulous. *h.* 4ft. Brazil, 1823. Stove sub-shrub. (B. R. 522.)

VERONICA (a mediæval name of doubtful derivation, probably from *hiera eicon*, sacred image; in allusion to the legend of the sacred handkerchief of St. Veronica). Cancerwort; Speedwell. Including *Diplophyllum* and *Leptandra*. ORD. *Scrophularineæ*. A genus comprising about 160 species of greenhouse or hardy herbs, shrubs, or rarely trees, broadly dispersed over temperate and frigid regions. Flowers often varying in colour in the same species, blue, purple, flesh-coloured, or white, disposed in bracteate, terminal or axillary racemes, rarely solitary in the axils of alternate leaves; calyx four, five, or very rarely three-parted, the segments scarcely imbricated; corolla tube rarely exceeding the calyx; limb spreading,

Veronica—*continued.*

four or five-cleft, the lateral lobes exterior (or one exterior), the upper and lower ones usually narrowest; stamens two, exserted; pedicels ebracteolate. Leaves opposite, rarely whorled or somewhat scattered, the cauline ones very rarely alternate; floral ones always alternate, similar to the cauline ones or often reduced to bracts. Sixteen species are indigenous in Britain; among them the following may be mentioned: *V. Beccabunga* (Brooklime), with rather fleshy, blunt leaves, which are considered to be anti-scorbutic; *V. Chamædrys*, one of the loveliest of our wild flowers; and *V. spicata*, often grown in gardens. The best-known cultivated species are here described. Except where otherwise stated, they are hardy, and of perennial duration, thriving in any fairly good soil, and being increased by divisions. The shrubby kinds may be readily multiplied by cuttings, and the annuals by seeds.*

V. alpina (alpine). *fl.* blue or violet; corolla two to three lines across; raceme spiciform or somewhat capitate, dense, or interrupted below. May. *l.* mostly shorter than the internodes of the simple stem (½in. to 1in. long), ovate to oblong, crenulate-serrate or entire. *h.* 9in. to 12in. Europe (Britain), Asia, North America. (F. D. 16; Sy. En. B. 980.)

V. a. Wormskioldii (Wormskiold's). A villous-pubescent form, with larger leaves. 1819. (B. M. 2975.)

V. amethystina (amethystine-blue). A synonym of *V. paniculata*.

V. amplexicaulis (stem-clasping). *fl.* in short, conical, dense spikes ½in. to 1in. long, on hairy peduncles 1in. to 1½in. long, crowded together near the ends of the branchlets; corolla white, the tube ¼in. long, the limb ¼in. across. *l.* loosely imbricated, amplexicaul or sub-amplexicaul, oblong, obtuse, ½in. long, ¼in. broad, glaucous, coriaceous, entire, slightly concave. *h.* 1ft. to 2ft. New Zealand. Decumbent or sub-erect shrub.

V. Andersonii (Anderson's).* *fl.* bluish-violet, sometimes whitish towards the base of the raceme; racemes shortly pedunculate, narrow-oblong, rather longer than the leaves. July. *l.* oblong, 3in. to 4in. long, somewhat obtuse, entire, puberulous on the margins, rather thick. *h.* 1½ft. Half-hardy shrub. Garden hybrid. (F. d. S. 658; L. J. F. 103; L. & P. F. G. 38.)

V. A. variegata (variegated). This differs from the type in having finely variegated leaves.

V. anomala (anomalous). *fl.* white, very shortly pedicellate or sessile; corolla tube ⅛in. long, the limb ⅛in. to ¼in. broad, the lobes nearly equal, three or two unequal, spreading, narrow; racemes crowded together, five to ten-flowered, sub-terminal. *l.* decussate, ½in. to 1in. long, ⅛in. to ¼in. wide, linear or linear-oblong, patent, often reddish-coloured, coriaceous, quite glabrous on the upper surface, sometimes ciliated on the margin, concave, entire, shortly petiolate. Branches long, slender, purplish or reddish towards the tips. *h.* 3ft. to 6ft. New Zealand. A dense-growing shrub.

V. Buxbaumii (Buxbaum's). *fl.* bright blue; corolla ⅛in. across; peduncles solitary, axillary in alternate, leaf-like bracts. April to September. *l.* shortly petiolate, oblong or ovate-cordate, ⅓in. to 1⅓in. long, coarsely serrated; floral ones similar, shorter than the decurved pedicels. Branches 6in. to 12in. long. Europe (naturalised in Britain). A prostrate annual. (F. D. 1982; Sy. En. B. 973.)

V. buxifolia (Box-leaved). *fl.* white; corolla tube short, the limb ⅛in. to ¼in. across; racemes very short, dense-flowered, crowded at the ends of the branches and sub-capitate, puberulous or glabrous; pedicels short; bracts as large as the sepals. *l.* ¼in. to ½in. long, ⅛in. to ¼in. broad, broadly oblong-obovate, obtuse, suddenly truncate or cordate at the very short, thick petiole, excessively thick and coriaceous, concave. *h.* 2ft. to 3ft. New Zealand. A small, stout, glabrous shrub.

V. carnosula (slightly fleshy).* *fl.* white, with reddish-yellow anthers; corolla tube very short, the limb ⅛in. to ¼in. across; spikes short, pilose and pubescent, crowded and forming heads at the ends of the branches, very dense-flowered. Summer. *l.* closely imbricated, sub-erect, ¼in. to ⅜in. long, broadly obovate or oblong or orbicular, round at tip, entire, very thick and coriaceous, almost sessile or on broad petioles. New Zealand. A stout, often prostrate shrub.

V. cataractæ (waterfall). *fl.* white or pinkish, ⅛in. to ¼in. in diameter; pedicels very slender, ½in. to 1in. long; racemes axillary, slender, 3in. to 8in. long, very many flowered; bracts linear, subulate *l.* sessile or petiolate, ½in. to 5in. long, ovate-oblong or narrow-lanceolate, acuminate, deeply and acutely serrate, coriaceous. Stems sub-erect or prostrate at the base and ascending, 10in. to 2ft. long, branched, rather slender. New Zealand. Shrub.

V. caucasica (Caucasian). *fl.* pale red; pedicels filiform; racemes loose, many-flowered, on slender peduncles. June. *l.* sub-sessile, once or twice pinnatisect; segments oblong or linear-cuneate, narrowed at base, entire or incised. Stems ascending or erect, pilose. Caucasus, 1816. (L. B. C. 1369.)

V. Chamædrys (Chamædrys). Angels' Eyes; Birds' Eyes; Germander Speedwell; God's Eye. *fl.* bright blue; corolla ⅓in. to ½in. across; raceme loose, 2in. to 5in. long, including the slender peduncle. May and June. *l.* all opposite, sub-sessile, ovate-cordate, ½in. to 1½in. long, deeply serrated. Branches 8in. to 2ft. long, slender, ascending. Europe (Britain). Plant hairy. See Fig. 164. (F. D. 448; L. B. C. 53; Sy. En. B. 986.)

Veronica—*continued.*

FIG. 164. FLOWERING BRANCHLET OF VERONICA CHAMÆDRYS.

V. chathamica (Chatham Island). *fl.* dark purple, large, numerous, closely set; peduncles ½in. long, pubescent; racemes 1in. to 1½in. long, sub-terminal at the ends of the branches and axillary to the uppermost leaves. *l.* spreading, sessile, ⅓in. to 1½in. long, ⅛in. to ½in. broad, obovate-oblong or ovate-oblong, acuminate, entire, flat, scarcely coriaceous. Branches wiry, pubescent. Chatham Island. A small, prostrate, rambling shrub, adapted to the ornamentation of rockwork or earth-banks.

V. Colensoi (Colenso's). *fl.* white, pink, or bluish; corolla tube short, the limb ⅛in. to ¼in. across; racemes sub-terminal, often compound, pedunculate, hardly longer than the leaves, puberulous. Summer. *l.* spreading or erecto-patent, almost sessile, ⅓in. to 1in. long, very coriaceous, linear-oblong or narrowly oblong-obovate, acute, entire, sometimes glaucous. New Zealand. A small, glabrous, half-hardy shrub.

V. cupressoides (Cypress-like). *fl.* violet, $\frac{1}{16}$in. in diameter, three or four at the end of the slender branchlets; bracts larger than the sepals, both broadly oblong, obtuse, not ciliated. *l.* $\frac{1}{16}$in. long, ovate-oblong, obtuse, not broader than the branch, opposite pairs connate at the base, erect or adpressed, glabrous, fleshy. New Zealand, Middle Island, &c. A dense, much-branched bush, 6in. to 3ft. or 4ft. high. This is known in gardens under name of *V. salicornioides*.

V. decussata (decussate). A synonym of *V. elliptica*.

V. Derwentia (River Derwent). *fl.* light blue or white, rather crowded in racemes often 6in. to 8in. long, in the upper axils; corolla lobes broad, acute, ¼in. long, obscurely arranged in two lips. June. *l.* sessile, broadly lanceolate, acuminate, 3in. to 4in. long, serrated. Stems 2ft. to 3ft. high. Australia, 1802. Greenhouse. (A. B. R. 531.) SYN. *V. labiata* (B. M. 1660, 3461).

V. diosmæfolia (Diosma-leaved). *fl.* lilac, ⅛in. to ¼in. across; pedicels slender; corymbs terminal, depressed, many-flowered. July. *l.* petiolate, close-set, spreading, rigidly coriaceous, ⅓in. to ⅔in. long, ⅛in. broad, linear-oblong, acute at both ends, entire, not shining, sharply keeled by the midrib below. Branches rather slender. *h.* 3ft. to 12ft. New Zealand, 1835. Greenhouse shrub.

V. elliptica (elliptic).* *fl.* white, large; corolla limb ⅓in. to ⅔in. broad; racemes very short, few-flowered, forming together a loose, sub-corymbose head at the tips of the branchlets. July. *l.* close-set, spreading, uniform, petiolate, ⅓in. to ⅔in. long, linear- or obovate-oblong, truncate at base, entire, flat, not shining. *h.* 5ft. to 20ft. New Zealand, Chili, Fuegia, and Falkland Islands, 1776. Half-hardy shrub or tree. (L. & P. F. G. iii., p. 101.) SYN. *V. decussata* (B. M. 242).

V. epacridea (Epacris-like). *fl.* white, collected into terminal, ovoid, leafy heads; corolla with a long tube, the limb $\frac{1}{12}$in. in diameter. *l.* sessile, 4in. in diameter, densely imbricate, spreading and recurved, ⅛in. to ⅙in. long, very broadly obovate-oblong, concave, rigid, glabrous, round or sub-acute at the tip. Stem much branched, rigid, tortuous. New Zealand. Half-hardy shrub.

V. formosa (beautiful). *fl.* pale blue, in short, loose racemes in the upper axils, forming terminal, leafy corymbs; corolla lobes ¼in. or more long. July. *l.* rather crowded, oval-oblong or lanceolate, entire or rarely obscurely toothed, thick, often recurved, ¼in. to ½in. long. *h.* 2ft. to 4ft. Australia, 1835. A

Veronica—*continued.*

beautiful, corymbosely-branched, greenhouse shrub (B. M. 4512; L. J. F. 3; L. & P. F. G. 95.)

V. gentianoides (Gentian-like). *fl.* blue, rather large; pedicels at length ⅓in. to ½in. long; racemes elongated, loose, many-flowered, pubescent. June. *l.* rather thick, entire or with a few crenatures, 1in. to 3in. long, the lower ones rosulate, obovate or oblong, the rest remote, oblong or lanceolate. Stems tufted, erect, simple, 6in. to 12in. or more high. Caucasus, 1748. (B. M. 1002; S. F. G. 5.) There is a very pretty variety, *alba*, with white flowers.

V. glauco-cærulea (glaucous-blue).* *fl.* deep blue, changing to purple, in short, few-flowered spikes, crowded together near the tips of the branchlets; corolla limb ⅓in. to ½in. in diameter; peduncles covered with soft, white hairs. *l.* closely imbricated, ⅓in. long, obovate-oblong, acute, rather concave, on short, broad petioles. New Zealand. A small, stout, decumbent or sub-erect shrub, much branched, intensely glaucous throughout, with slightly hairy branches.

V. Grievei (Grieve's). A garden hybrid near *V. saxatilis*, resembling that species, but with brighter coloured-flowers. It is more suitable for flower borders.

V. Guthrieana (Guthrie's). A garden hybrid of which one of the parents is *V. saxatilis*.

V. Hulkeana (Hulke's).* *fl.* lilac, sessile; corolla ⅓in. broad; spikes spreading, puberulous and glandular, forming long, terminal, opposite-branched panicles, 4in. to 10in. long. Summer. *l.* in distant pairs, 1in. to 1½in. long, oblong-ovate, obtuse or acute, coarsely serrated, rather coriaceous; petioles ⅛in. to ¼in. long. Stem nearly simple, terete. *h.* 1ft. to 3ft. New Zealand, 1865. Half-hardy shrub. (B. M. 5484.)

V. incana (hoary).* *fl.* blue; pedicels much shorter than the woolly calyx; racemes often solitary. July. *l.* petiolate, oblong or lanceolate, narrowed at base, the lower ones obtuse and crenate, the upper ones acute and serrated or entire at apex, both sides (as well as the stem) hoary-tomentose. *h.* 2ft. Russia, 1759. SYN. *V. neglecta* (S. B. F. G. 55).

FIG. 165. VERONICA LONGIFOLIA SUBSESSILIS, showing Habit and single detached Flower.

V. incisa (cut-leaved). *fl.* blue, on pedicels rather longer than the calyx; racemes solitary or paniculate, slender. July. *l.* scattered, pinnatifid to the middle or rather deeper; lobes lanceolate, acute. Stems glabrous or canescent-pubescent. *h.* 2ft. Siberia, 1739. (L. B. C. 1397.)

V. Kirkii (Kirk's). *fl.* pure white, shortly pedicellate, disposed in slender racemes in the axils of the uppermost leaves; corolla tube ⅛in. long, the limb ¼in. in diameter; racemes 4in. to 8in. long, dense-flowered. *l.* 1in. to 1½in. long by ⅓in. wide, lanceolate, decussate or loosely imbricate, entire, smooth, acute, sessile by a broad base, slightly concave, recurved. *h.* 6ft. to 12ft. New Zealand. A tall, handsome shrub, with dark brown, polished branches.

V. labiata (lipped). A synonym of *V. Dercentia*.

V. lævis (smooth). *fl.* white, ¼in. across; racemes twice as long as the leaves, usually crowded at the ends of the branches,

Veronica—*continued.*

puberulous. *l.* erect and adpressed, imbricating, rarely spreading, ⅛in. to ⅓in. long, ¼in. to ⅛in. broad, broadly obovate-oblong, obtuse or acute, extremely coriaceous, entire, concave, sharply keeled by the stout, prominent midrib; petioles short, very stout. *h.* 2ft. to 4ft. New Zealand. A glabrous shrub.

V. latifolia (broad-leaved). A form of *V. Teucrium*.

V. ligustrifolia (Ligustrum-leaved). *fl.* white, rather large; pedicels slender; racemes about twice as long as the leaves, rather slender, loose-flowered, puberulous. *l.* 1¼in. to 3in. long, usually very narrow, linear-lanceolate, acuminate, ⅛in. to ¼in. broad, flat or concave and keeled at the back, quite entire, sometimes ⅓in. to ⅔in. broad and obtuse. New Zealand. A large, glabrous, diffusely-branched, greenhouse shrub.

V. Lindleyana (Lindley's). A form of *V. salicifolia*.

V. longifolia (long-leaved). *fl.* lilac; pedicels often shorter than the calyx; racemes solitary or few, dense-flowered. August. *l.* shortly petiolate, opposite or ternately whorled, ovate or cordate at base, ovate- or oblong-lanceolate, acuminate, argutely serrated. Stems glabrous or puberulous. *h.* 2ft. Central Europe, 1731.

V. l. subsessilis (nearly sessile). *fl.* of a beautiful amethystine blue; rachis of the raceme adpressedly-pubescent. *l.* very shortly petiolate, 2in. to 4in. long, simply serrated, adpressedly puberulous beneath. *h.* 2ft. to 4ft. Japan, 1878. See Fig. 165. (B. M. 6407; G. C. n. s. xvi., p. 789; R. H. 1881, p. 270.)

V. Lyallii (Lyall's).* *fl.* white, the veins pink near the throat; corolla nearly ½in. across; pedicels slender, the lower ones ½in. long; peduncles axillary, slender, 3in. to 8in. long, glabrous, many-flowered. Summer. *l.* shortly petiolate, ⅛in. to ½in. long, ovate to ovate-lanceolate, obtuse or acute, glabrous, with a few coarse serratures. Stems slender, prostrate and rooting, diffusely branched, 5in. to 15in. long. New Zealand, 1879. Shrub. (B. M. 6456.)

V. lycopodioides (Lycopodium-like). *fl.* white, sessile, disposed in small, dense, oblong heads at the ends of the branches; sepals linear-oblong, obtuse, ciliated; corolla tube very short, the limb ⅛in. in diameter. *l.* very densely and closely imbricate, thickly coriaceous, very broadly reniform-ovate, much broader than long, abruptly narrowed into an acute tip, about ⅒in. broad; opposite pairs connate at the base. New Zealand. An erect, much-branched, stout shrub.

V. multifida (much-cleft). *fl.* light blue; pedicels scarcely exceeding the calyx; racemes dense-flowered. June. *l.* rarely more than ½in. long, once or twice pinnatisect; segments linear or subulate, rarely oblong, narrowed at base. Stems decumbent or diffuse, woody at base, cano-pubescent, 6in. long. Central and Eastern Asia, 1748. (B. M. 1679; J. F. A. 329.)

V. neglecta (neglected). A synonym of *V. incana*.

V. officinalis (officinal). Common Medicinal-tea Speedwell; Fluellen; Ground-hele. *fl.* pale blue or lilac, on very short pedicels; corolla ⅛in. across; racemes slender, many-flowered. May to July. *l.* all opposite, shortly petiolate, obovate-oblong or orbicular, ¼in. to 1in. long, serrated. Stem hairy, decumbent; branches 2in. to 18in. long, ascending. Europe (Britain). (F. D. 248; Sy. En. B. 984-5.)

V. orchidea (Orchis-like). A form of *V. spicata*.

V. orientalis (Eastern). *fl.* flesh-coloured, small, and shortly pedicellate, or blue, larger, and longer-pedicellate; raceme loose. July. *l.* linear, lanceolate, or cuneate-oblong, entire, toothed, or with a few pinnatifid laciniæ, narrowed at base. Stems decumbent or diffuse, woody at base, cano-pubescent or glabrous. Levant, 1748. (L. B. C. 419.) SYN. *V. taurica* (L. B. C. 911).

V. paniculata (panicled). *fl.* blue; pedicels longer than the calyx; racemes numerous, loose, many-flowered, paniculate. June. *l.* mostly opposite or ternately whorled, lanceolate, acute, crenate-serrate, narrowed at base, petiolate or rarely sub-sessile, rather thick, pale, glabrous or scarcely puberulous. Stems 1ft. to 3ft. high, glabrous or canescent-puberulous. South-Eastern Europe, 1797. SYN. *V. amethystina*.

V. parviflora (small-flowered). *fl.* blue, small; corolla ⅛in. to ¼in. across; racemes generally straight, about twice as long as the leaves, dense-flowered, pubescent. May. *l.* erect or spreading, 1in. to 3in. long, lanceolate to linear-lanceolate, flat or concave and keeled, quite entire, acute or acuminate. *h.* 4ft. to 6ft. New Zealand, 1822. Half-hardy shrub. *V. p. angustifolia* (B. M. 5965) is a narrow-leaved form, with lilac flowers.

V. pectinata (comb-like). *fl.* blue; corolla ample; pedicels scarcely longer than the calyx; racemes at length as much as 1ft. long. May. *l.* often small, obovate to oblong-linear, crenate or scarcely incised, narrowed at base. Stems prostrate, cano-pubescent or villous. Syria, &c., 1819.

V. p. rubra (red). A fine variety, with reddish-pink flowers.

V. perfoliata (perfoliate). Digger's Speedwell. *fl.* bluish-violet, streaked with purple, in long, slender racemes in the upper axils;

Veronica—*continued.*

corolla lobes nearly rotate, but obscurely bilabiate. August. *l.* amplexicaul and often more or less connate by their broad bases, ovate or ovate-lanceolate, acuminate or acute, entire or few-toothed, 1in. to 3in. long. Stems simple or slightly branched. *h.* about 3ft. Australia, 1815. Greenhouse perennial or under-shrub. (B. M. 1936; B. R. 1930; L. B. C. 781.)

V. pimeleoides (Pimelea-like). *fl.* deep purple, opposite, in the axils of large, leafy, ciliated bracts; spikes short, very pubescent or tomentose, sub-distichous. *l.* sessile, imbricated, erecto-patent, ⅛in. to ¼in. long, broadly obovate-oblong, obtuse, rather concave, obtusely keeled, slightly glaucous. Branches erect, transversely scarred. *h.* 4in. to 10in. New Zealand. A sub-erect, greenhouse shrub.

V. pinguifolia (fat-leaved).* *fl.* white; sepals obtuse, ciliated; spikes very short, pilose and pubescent, crowded in heads at the tips of the branches, very dense-flowered. June. *l.* sessile, imbricated, ⅛in. to ½in. long, obovate-oblong, obtuse, entire, very thick and coriaceous, concave, not keeled. Branches pubescent above, transversely scarred. *h.* 4in. to 4ft. New Zealand, 1870. An erect or decumbent, robust shrub. (B. M. 6147; B. M. 6587, under name of *V. carnosula.*)

V. prostrata (prostrate). A form of *V. Teucrium.*

V. salicifolia (Willow-leaved). *fl.* bluish-purple or white, very variable in size and length of corolla tube; pedicels slender; racemes much longer than the leaves, simple, very many flowered, pubescent or glabrate. June. *l.* sessile, 2in. to 6in. long, linear- or oblong-lanceolate, acuminate, entire, glabrous. Branches terete, as thick as a crow-quill. New Zealand. A large, half-hardy, glabrous shrub. *V. Lindleyana* (P. M. B. xii. 247) is a form of this.

V. salicornioides (Salicornia-like). The plant grown under this name in English gardens is *V. cupressoides*; the true *V. salicornioides* has apparently not yet been introduced.

V. satureioides (Satureia-like). *fl.* blue; calyx unequally five-partite; corolla limb sub-bilabiate; raceme spicate, ½in. long. May. *l.* opposite, decussate, crowded, oblong or obovate, ⅓in. long; tip slightly toothed. Stems cæspitose; base woody. *h.* 3in. Dalmatia, 1885. (R. G. 1192, fig. 3.)

V. saxatilis (rock-loving). Rock Speedwell. *fl.* bright blue, very beautiful; corolla ½in. across; raceme sub-corymbose, terminal, few-flowered. July to September. *l.* ¼in. to ½in. long, the lower ones obovate, the upper oblong, coriaceous; teeth very few or none. Stem woody; branches many, 2in. to 4in. long, with leafy barren shoots. Europe (Britain). Plant decumbent. (L. B. C. 704; Sy. En. B. 981.)

V. speciosa (showy). *fl.* deep blue-purple; corolla ½in. broad; racemes dense-flowered, 1in. in diameter, not longer than the leaves, stout, erect. May. *l.* sessile or on very short, thick petioles, 2in. to 4in. long, obovate-oblong, rounded at apex, very coriaceous, shining, entire, downy on the midrib above. Branches angled. *h.* 1½ft. New Zealand, 1835. Half-hardy shrub. (B. M. 4057; P. M. B. x. 247.)

V. s. imperialis (Imperial). A very handsome and free-flowering garden variety, producing its purple flowers in large, dense spikes. 1878. (F. d. S. 2317.)

V. s. rubra (red). This differs from the type in having rose-coloured flowers. (F. d. S. 196.)

V. spicata (spike-flowered).* *fl.* bright blue; corolla tube shorter than the calyx; stamens very long, purple; spike dense, 1½in. to 3in. long. July and August. *l.* opposite or whorled, 1in. to 1½in. long, sub-sessile, narrow-oblong or oblong-lanceolate, serrated above the middle. Stem 6in. to 18in. long, stout, erect from a decumbent base, leafy. Europe (Britain), &c. (F. D. 52; Sy. En. B. 982.) *V. orchidea* (B. M. 2210) is a form of this species, with narrow, tortuous corolla segments.

V. syriaca (Syrian). *fl.* blue; corolla rather large; pedicels filiform, several times longer than the calyx; racemes slender, bundle-flowered. June. *l.*, lower ones petiolate, upper ones sessile, ovate or ovate-lanceolate, with a few incised teeth; lower floral ones somewhat conformed, the rest small, entire. Stems ascending or diffuse, branched. Syria, 1857. Half-hardy annual. (B. H. vii. 42; F. d. S. 1259.)

V. taurica (Taurian). A synonym of *V. orientalis.*

V. Teucrium (Teucrium). Hungarian or Saw-leaved Speedwell. *fl.* light blue; calyx segments very unequal; racemes many-flowered. July. *l.* sessile or the lower ones shortly petiolate, ovate to linear, rounded or cordate at base, more or less toothed or sub-pinnatifid. Sterile stems prostrate; floral ones ascending from a decumbent base, or erect, cano-pubescent or villous. South Europe, 1596. A variable species. (B. H. xxx. 7; L. B. C. 425.) There is a prostrate, small-leaved form with bright blue flowers. (B. M. 3683, under name of *V. prostrata.*)

Veronica—*continued.*

V. T. latifolia (broad-leaved). A tall form, with broader leaves than the type. (S. B. F. G. 23, under name of *V. latifolia.*)

V. Traversii (Travers').* *fl.* white; corolla lobes ¼in. across; racemes longer than the leaves, sub-terminal, 1in. to 2in. long, puberulous, many-flowered. Summer. *l.* spreading, sessile, ¾in. to 1in. long, obovate or linear-oblong, acute or obtuse, entire, coriaceous, flat. Branches terete. *h.* 2½ft. New Zealand, 1873. Shrub. (B. M. 6390.)

V. vernicosa (varnished). *fl.* white; racemes crowded at the ends of the branches, puberulous, 1in. to 1½in. long, often peduncled, tapering or caudate; bracts very small. *l.* close-set, spreading, petiolate, ⅓in. to ½in. long, ¼in. to ⅓in. broad, obovate-oblong, obtuse or apiculate, varnished on the upper surface, entire, flat or a little concave. New Zealand. A small, stout, glabrous shrub.

V. virginica (Virginian).* Culver's Physic; Great Virginian Speedwell. *fl.* white, sometimes bluish; corolla salver-shaped; terminal spike 6in. to 10in. long, with usually several shorter ones from the upper axils. July. *l.* in whorls of three to nine, lanceolate, slenderly acuminate, sometimes oblong, very closely and sharply serrated, 3in. to 5in. long. Stems simple, 2ft. to 6ft. high. North America, 1714. (B. M. Pl. 196.) SYN. *Leptandra virginica.*

VERRUCÆFORM. Shaped like a wart.

VERRUCOSE. Warted; covered with wart-like, sessile elevations.

VERSATILE. Turning freely on its support; swinging to and fro.

VERSCHAFFELTIA (named in honour of Ambrosius Verschaffelt, who wrote a work on Camellias in 1848). SYN. *Regelia* (of gardens). ORD. *Palmæ.* A monotypic genus. The species is a handsome, stove Palm, requiring similar culture to **Stevensonia** (which *see*).

V. melanochætes (black-spined). A synonym of *Roscheria melanochætes.*

FIG. 166. VERSCHAFFELTIA SPLENDIDA.

V. splendida (splendid).* *fl.*, spathes three; spadix 3ft. to 6ft. long, on a compressed peduncle 3ft. to 4ft. long; flowering branches 7in. to 8in. long. *l.* 4ft. to 7ft. long, 3ft. to 5ft. broad, cuneate-obovate, bright green, bifid, the edges deeply incised,

Verschaffeltia—*continued.*

the primary veins prominent on both surfaces; petioles 6in. to 12in. long, pale green, semi-terete, grooved down the face; sheaths 2½ft. to 3½ft. long, white-granular. Stem 6in. to 12in. in diameter, and (as well as the leaf-sheaths and petioles) very spiny when young. *h.* 80ft. Seychelles, 1864. See Fig. 166. (F. d. S. 1597-8; I. H. 430; R. G. 1875, p. 308; R. H. 1869, 148.) This has been known in gardens as *Regelia magnifica*, *R. majestica*, and *R. princeps*.

VERTEBRATE. Contracted at intervals, like the vertebræ of animals, there being an articulation at each contraction, as in some leaves.

VERTEX. The apex of an organ.

VERTICAL. Placed in the direction from base to apex.

VERTICIL. A whorl.

VERTICILLASTER. A false whorl, composed, in *Labiatæ*, of a pair of opposite cymes.

VERTICILLATE. Disposed in a whorl; when several bodies form a ring round a common axis: *e.g.*, leaves round a stem; sepals, petals, and stamens round an ovary.

VERTICORDIA (from *verto*, to turn, and *cor*, *cordis*, a heart; a title of Venus, to whom the Myrtle was sacred). Juniper Myrtle. Including *Chrysorrhoe*. ORD. *Myrtaceæ*. A genus embracing thirty-seven species of greenhouse shrubs, with usually the aspect of a Heath or Diosma, glabrous except the cilia on the edges of the leaves, limited to Australia. Flowers whitish, pink, or yellow, usually pedicellate in the upper axils, often corymbose, spicate, or racemose; calyx lobes five, often coloured, elegantly plumose, radiating; petals five, entire, fringed, or digitate; stamens ten, alternating with as many staminodia. Leaves small, opposite or very rarely alternate, entire. A selection of the introduced species is here given. They are of easy culture in a compost of sandy loam and leaf mould. They are readily propagated by cuttings of firm or partially-ripened shoots, inserted under a glass, or in a close frame. An abundance of water and frequent syringings are requisite throughout the summer. The roots should not be allowed to get quite dry at any time.

V. Brownii (R. Brown's). *fl.* white, small, very numerous, in dense, broad, terminal, leafy corymbs, more or less pedunculate; petals shorter than the calyx lobes. April. *l.* obovate or oblong, very obtuse, keeled or triquetrous, $\frac{1}{12}$in. to $\frac{1}{8}$in. long. *h.* 3ft. 1842. Shrub erect, bushy, and much branched.

V. densiflora (dense-flowered). *fl.* white or pink, in dense, terminal, leafy corymbs, usually pedunculate; petals short, nearly orbicular, fringed. June. *l.* linear, semi-terete or triquetrous, slender, ¼in. to ½in. long, crowded on the short side branches so as to form axillary tufts as in *V. Fontanesii*, but usually more remote on the main stems. *h.* 2ft. to 3ft. 1860. Shrub erect and bushy.

V. Fontanesii (Desfontaines'). *fl.* white or pink, in terminal, leafy corymbs, or rounded, dense panicles, close above the stem leaves or shortly pedunculate; petals as long as the calyx lobes, slightly pubescent. April. *l.* linear, semi-terete or triquetrous, usually slender, obtuse or mucronate, three to four lines long, densely crowded on the short lateral shoots, or rarely ½in. long and looser. *h.* 3ft. to 4ft. 1826. Shrub erect and bushy. SYN. *Chamælaucium plumosum*.

V. insignis (remarkable). *fl.* pink, on pedicels often more than 1in. long, in loose, irregular, terminal, leafy corymbs; petals orbicular, ciliated. April. *l.* broadly ovate to oblong, very obtuse or almost mucronate, two to four lines long, the lower ones, and those of the barren branches, often laterally compressed or vertical. *h.* 1ft. to 2ft. 1839. Shrub erect, branching from the base.

V. nitens (shining). *fl.* golden-yellow, on slender pedicels, in a broad, terminal corymb; petals about as long as the calyx, irregularly toothed. April. *l.* linear, semi-terete, rather slender, acute or mucronulate, mostly ½in. to ¾in., but the lower ones sometimes above 1in., long. *h.* 2ft. 1862. Shrub corymbosely branched. (B. M. 5286.) SYN. *Chrysorrhoe nitens*.

VERULAMIA. A synonym of **Pavetta** (which *see*).

VERVAIN. *See* **Verbena.**

VERVAIN, BASTARD. *See* **Stachytarpheta.**

VERVAIN SAGE. *See* **Salvia Verbenaca.**

VESICARIA (from *vesica*, a bladder or blister; alluding to the inflated pods). Bladder Pod or Seed. ORD. *Cruciferæ*. A genus embracing about a score species of mostly hardy, branched, annual or perennial herbs, found in temperate North America, South Europe, Syria, Persia, and the Andes. Flowers yellow or purple, variable in form, large, rarely small; sepals equal at base, or the lateral ones sub-saccate; racemes ebracteate. Pods globose or inflated. Leaves entire, sinuate, or pinnatifid. The species here described are well adapted for ornamenting rockwork. They are of the simplest culture. The annuals may be increased by seeds, and the perennials by divisions.

V. arctica (Arctic). *fl.* yellow, many in dense racemes. August. *l.* oblanceolate and linear-spathulate, of a beautiful silvery colour, clustered. *h.* 1ft. North America, 1828. Perennial. (B. M. 2882.)

V. gracilis (slender). *fl.* yellow; petals spreading, obcordate, nearly sessile; racemes elongated. June. *l.* lanceolate, entire or slightly angular, nearly naked; lower ones sub-spathulate, petiolate. Stems many, filiform, rigid, slightly scabrid. *h.* 6in. Texas, 1834. Annual. (B. M. 3533.)

V. græca (Greek). *fl.*, petals nearly twice as long as the calyx, the lamina yellow, elliptic. Summer. *l.* of the sterile branches thick, oblong-spathulate, slightly acute; those of the fertile stems sessile, erect, acute, the margins ciliated and often denticulate. Greece. Perennial. SYN. *Alyssum utriculatum*.

V. grandiflora (large-flowered).* *fl.* yellow, large; petals rounded, spreading, very shortly clawed; racemes elongated, many-flowered. July. *l.* oblong; radical ones sub-lyrately pinnatifid, petiolate; cauline ones sinuate-toothed, sessile. Stem erect, flexuous. *h.* 1ft. Texas, 1835. A stellately-pubescent annual. (B. M. 3464; S. B. F. G. ser. ii. 401.)

FIG. 167. VESICARIA UTRICULATA, showing Habit and detached Flower.

V. utriculata (bladder-podded).* *fl.* yellow, closely resembling the Wallflower; calyx bisaccate at base. April to June. *l.* oblong, quite entire, smooth; lower ones ciliated, somewhat spathulate. *h.* 1ft. South Europe, 1730. Perennial. See Fig. 167. (S. F. G. 627.)

VESICLE. A small bladder or air cavity.

VESICULAR, VESICULATE, VESICULOSE, VESICULÆFORM. Inflated; bladdery; appearing as if composed of little bladders.

VESLINGIA (named after John Vesling, 1598-1649, a traveller in the East, and Professor of Botany at Padua). SYNS. *Guizotia* (the proper name, according to Bentham and Hooker), *Ramtilla*. ORD. *Compositæ*. A small genus (three species) of tropical African, stove, annual herbs. Flower-heads yellow, at the tips of the branches or pedunculate in the upper axils, heterogamous;

Veslingia—*continued.*

involucral bracts somewhat biseriate; receptacle convex or conical; ray florets ligulate, three-toothed at apex; achenes glabrous. Leaves opposite or the upper ones alternate, entire or toothed. Only one species calls for description here. It thrives in any rich soil, and may be increased by seeds.

V. sativa (cultivated). *fl.-heads* golden-yellow, 2in. across, rather handsome; involucre simple, of five leaflets. August and September. *l.* amplexicaul, cordate-lanceolate, remotely serrated. *h.* 6ft. 1806. SYN. *Verbesina sativa.* (B. M. 1017.) *Guizotia oleifera* is now the correct name of this plant.

VESPA. *See* **Wasps.**

VESPERTINE. Appearing or expanding in early evening.

VESPUCCIA (commemorative, in honour of Amerigo Vespucci, 1451-1512, after whom America is named). *Hydrocleis* is now the correct name of this genus. ORD. *Alismaceæ.* A small genus (three or four species) of highly glabrous, stove, aquatic herbs, inhabiting tropical South America. Flowers solitary, large, hermaphrodite, on long, thick peduncles; perianth segments six, the three outer ones (sepals) persistent, the three inner ones (petals) yellow, larger, very slender, deciduous; stamens numerous, hypogynous, in many series. Leaves fascicled, floating, ovate- or cordate-orbicular, the nerves converging at the apex; petioles thick, sheathing at base. *V. Humboldtii*, the only species calling for description here, is of easy culture in a tub or cistern of water. It may be readily increased by seeds, or by runners.

V. Humboldtii (Humboldt's). *fl.*, sepals narrow-ovate, obtuse; petals broadly obovate-cuneate, ample; stamens numerous, fertile or sterile; peduncles springing from the nodes, one-flowered. May. *l.*, both radical and cauline ones broadly ovate or sub-orbicular, obtuse, loosely cordate at base, 2in. to 3¼in. long, 1½in. to 2⅔in. broad, coriaceous; petioles terete, 4in. to 6in. long. Venezuela to Buenos Ayres. SYN. *Limnocharis Humboldtii* (B. M. 3248; B. R. 1640). *Hydrocleis Commersoni* is now the correct name of this plant.

VESSELS. In the vascular system of vascular plants (*i.e.*, the flowering plants and higher Cryptogams), Vessels are found plentifully; but they do not occur in any groups of plants lower than the Ferns and their allies, though the laticiferous cells of a few Fungi are a good deal like them in appearance.

Vessels may be grouped as follows: 1. True Vessels, being those of the fibro-vascular bundles, which compose the vascular system. These comprise (*a*) Vessels of the Wood ("xylem") and (*b*) Vessels of the Bast ("phloem"), or sieve-tubes. 2. Vessels of the Cellular Tissue, or Ground Tissue, scattered through the pith and cortex of the roots and stems, and among the green cells of leaves. These three classes of Vessels differ materially in their nature, contents, and uses. The two classes of true Vessels agree in being present in all complete fibro-vascular bundles; and also in being always formed by the absorption of the walls that separate elongated cells placed in rows, either end to end, or overlapping more or less at the tapering ends, so that tubes are thus formed of indefinite length. In most Vessels it is easy to trace the cells of which they are formed by the marks that remain on the walls where the cells meet. The Vessels of the Wood differ from those of the Bast in several important respects. But before stating these it may help to elucidate the subject if a brief account of the ordinary structure of fibro-vascular bundles is given.

We shall select for description such a bundle as may be found in the stems of many Monocotyledons. In these plants the bundles usually remain separated from one another, during their whole existence, by the cellular tissue in which they are imbedded; and after they are once formed they do not undergo changes, so that the arrangement of the cells and Vessels of which they are built up is little, if at all, altered during growth. The simplest bundles of this kind consist of a group of the Vessels

Vessels—*continued.*

of the Wood (called "tracheæ"), united with a group of Vessels of the Bast ("sieve-tubes"); but in most parts of plants these are accompanied by cells, some of which are elongated and slender (fibre-cells or "prosenchyma") while others are little, if any, longer than broad ("parenchyma"). Some of the cells usually remain thin-walled; but others have the walls much thickened by deposits upon the inner surface, and then the tissue is called "sclerenchyma." This tissue adds to the strength of the bundle, being arranged alongside the Vessels (as wood-fibres or hard-bast fibres), or forming a sheath surrounding the bundle entirely or in part. The commonest position of the wood and bast of each bundle, as seen in transverse section, is that in which the wood lies nearer the centre of the stem, and the bast nearer the circumference; but in some plants there is bast inside, but not outside, of the wood, or there may be bast both inside and outside, or even all round the wood. Less often the bast lies in the middle, with the wood all round it. The arrangements in leaves correspond with those in stems. If the leaf is held erect, with the upper surface next the stem, that surface is nearer the centre of the stem, and the lower surface is further from it. In accordance with this, the Wood-vessels of each bundle are usually nearer the upper surface, and the bast nearer the lower surface of the leaf. In roots the earliest bundles to appear (called the primary wood-bundles), consist entirely of Wood-vessels, which are formed successively nearer and nearer the centre of the root, increasing in size as they come nearer to the centre. Between them, and at the same distance from the centre as they are, the bast is formed; hence, the root is markedly different from the stem in the arrangements of the bundles. In the stems and roots of Monocotyledons, the bundles early assume the appearance and structure that they permanently retain; but in woody Dicotyledons and Conifers, changes occur after the first year of growth, which greatly affect their original appearance. In each bundle in the stem, the wood and the bast are separated by a layer of thin-walled cells (the "cambium") which continues to form new cells by divisions parallel to its surfaces, producing new wood to the outside of the older wood, and new bast to the inside of the older bast. The cambium forms a complete cylinder around the wood of the stems of these plants, and gives origin to ring above ring of wood, usually one in each year of growth. The bundles grow so large that they are separated only by narrow belts of cells (medullary rays), the oldest of which runs from the pith in the centre to the cortex outside the bast; while the new rays formed each year run from the inner border of the ring of wood to the cortex. The fibro-vascular bundles can scarcely be separated, after a time, from one another; but the wood and the bast are easily disunited in most Dicotyledons at the cambium, as the cells of this ring readily give way, and the bark is thus easily separable from the wood. The bast forms the innermost layer of the bark, and its connection with the wood tends to become less evident than it was before the bundles were united by the continuous cambium.

In the roots of Dicotyledons and Conifers, the earliest-formed wood-bundles do not grow; but there is a layer of cambium to the inside of each bast bundle, and soon this layer begins to form wood from its inner surface, and bast from its outer. After a short time, the cambium forms a continuous layer like that in the stem, and the roots in cross-sections look much like stems, except that the pith in the centre is often small or wanting, and that a practised eye can usually detect the primary wood-bundles lying close to the centre, and free from the bundles formed by the cambium.

We must now pass to the various kinds of Vessels met with in the wood and the bast. In the wood of all

Vessels—*continued.*

bundles there are "spiral" or "annular" Vessels. These are long, slender tubes, which appear round in transverse section. They frequently show very slight traces of the cells of which they were built up. The characteristic feature in them is the existence of a peculiar thickening deposit in the vessel, which, in a longitudinal section of the bundle, is not unlike a glass tube inclosing a closely-wound spiral wire, or wire rings; or a more familiar comparison may be made with an indiarubber tube, kept open by a wire spirally coiled in its interior. Besides spiral and annular Vessels, the wood-bundles very generally contain others, in which the thickening deposits are laid down on the inner surface of the walls in the form of a more or less regular network ("reticulated Vessels"), or of the steps of a ladder ("scalariform Vessels" of Ferns and their allies), or covering the wall, so as to leave only narrow tubes or pits through the new layers ("pitted or dotted Vessels," or "Ducts"). All these Vessels show an angular form in transverse section; and they are generally wider than the spiral Vessels. They also show distinctly the boundaries of the cells of which they are built up; though the openings from cell to cell are always relatively large. Spiral and annular Vessels are very rarely formed by the cambium; hence, in Dicotyledons and in Conifers, they are present in the stems and roots usually only in the earliest-formed wood —*i.e.*, they surround the pith; and, at one period, they were supposed to form around the pith a peculiar organ, which was called the "medullary sheath." In Dicotyledons, the Vessels in the wood formed by the cambium are almost all reticulated, dotted, or pitted. In Conifers, very few Vessels are formed by the cambium, their work being done by wood-cells, with openings from one to the other of a peculiar nature. All the characteristic Vessels of the Wood very soon lose their protoplasm, and contain only air or sap, or, more generally, both air and sap. The walls of fully-formed Wood-vessels are lignified and firm.

The Vessels of the Bast are very distinct from those of the wood. They are always present in the soft bast (though not always easily detected, except by an expert microscopist); but a few may also be found in some plants in the pith or the cortex. They assume the form of slender tubes, with thin, flexible walls, unmarked by thickening deposits. The walls separating the cells that make up these Vessels are not entirely absorbed (as is the case in the Wood-vessels). They can always be recognised as cross-partitions; but they are pierced by numerous small openings, so as to resemble a sieve, whence they are called "sieve-plates," and the Vessels are called "sieve-tubes." Often, the side walls of adjoining tubes also show sieve-plates. The sieve-tubes retain their protoplasmic contents; and the protoplasm extends through the sieve-plates. Sachs believes that the new protoplasm is largely produced in the sieve-tubes; and there is no doubt that they are the channels by which the protoplasm is chiefly, if not entirely, carried from one part of a plant to another, as may be required during growth.

The Vessels of the ground-tissue are of far less general occurrence than those of the vascular system; and they are very different from these in their nature, if we except the small, scattered bundles of sieve-tubes that traverse the ground-tissues of certain plants. The only form of ground-tissue Vessels that calls for special mention is that containing "latex," from which the Vessels themselves are called "Laticiferous Vessels." They exist only in certain orders of plants, chiefly among Dicotyledons, *e.g.*, *Campanulaceæ*, many *Compositæ*, *Euphorbiaceæ*, *Ficoideæ*, *Papaveraceæ*. Among Monocotyledons, they can scarcely be said to exist in their characteristic form, or with their characteristic contents. Laticiferous Vessels vary in their mode of origin in different plants. In most (*e.g.*, Poppies, Dande-

Vessels—*continued.*

lion), they are formed, like other Vessels, by the union of cells, of which the dividing-walls are entirely or partially absorbed. Thus very irregular Vessels are formed, which unite freely with one another by branches, so as to form a copious network, with free inter-communication. The walls of these Vessels seldom show thickening deposits. In a few orders (*Asclepiadeæ*, *Euphorbiaceæ*), the Laticiferous Vessels are probably formed, not by the union of cells, but by the elongation and branching of cells, which are not divided by cross-partitions, and which thus reach a very great length. It is believed, by many botanists, that the Laticiferous Vessels of some plants (*e.g.*, *Rhus*) are really intercellular spaces, into which the latex is poured. The Laticiferous Vessels frequently accompany the sieve-tubes, and may even take their place to some extent. In those Monocotyledons that possess latex, it is contained in rows of large cells, separated by walls, in which perforations have not been clearly made out (*Allium Cepa*); or, in those plants (*Galanthus*) in which the Vessels consist of cells, with perforated walls, the contents do not resemble latex, but are only clear sap, with raphides, *i.e.*, slender crystals of Oxalate of Lime. The latex, in Dicotyledons, is a peculiar fluid, which at once appears on breaking any part of a plant in which it exists. It is clear while in the uninjured tissues; but on exposure to the atmosphere, on a broken surface, it becomes turbid. It is then white, like milk, in most plants; but in some it is coloured yellow (*Chelidonium*) or orange by pigments in it. The microscope shows that it is chiefly composed of watery sap, in which float myriads of extremely minute granules: these, as in milk, are the cause of its opaque, white appearance when exposed to the air. On continued exposure to the air, or mixture with alcohol, acids, &c., masses separate from the latex in the form of "coagula," which usually become dark in colour. These coagula often afford useful products, *e.g.*, Opium, and Caoutchouc, or Indiarubber. They vary considerably in composition, texture, and properties. The latex usually has dissolved in it small quantities of sugar, gum, protoplasm, and alkaloids; and starch granules are present in the latex of some plants (*Euphorbia*). In the Papaw (*Carica Papaya*), there is a peculiar substance ("papayotin") dissolved in the latex, which exerts a digestive action on muscular fibre. It is believed by many botanists that the Laticiferous Vessels may be of the same use in plants that veins are in animals; but the plants that possess them are comparatively few, and there is never a central organ for propelling the latex, as the heart propels the blood. The latex, like the blood, contains substances employed in the nutrition of the plant, and also substances that must be regarded as mere excretions formed during the processes of growth, and that would be hurtful if allowed to remain in the cells. Laticiferous Vessels are confined to the higher plants; but Laticiferous cells occur among some of the cellular Cryptogams, and notably in the genus *Lactarius*, among Mushrooms.

VESTIA (named in honour of L. C. de Vest, 1776-1840, Professor at Grätz). ORD. *Solanaceæ*. A monotypic genus. The species is an interesting, erect, glabrous, much-branched, greenhouse shrub. For culture, *see* **Cestrum.**

V. lycioides (Lycium-like). Chilian Box-thorn. *fl.* yellow, solitary or few at the tips of the branches, pendulous; calyx shortly five-toothed, ¼in. long; corolla tube 1in. long, the limb of five induplicate-valvate lobes; stamens five, exserted. June. *l.* entire, oblong or obovate, shining, slightly fleshy, 1½in. to 3in. long; petioles about ¼in. long, channelled above. *h.* 3ft. Chili, 1815. (B. M. 2412; B. R. 299.)

VETCH. *See* **Vicia.**

VETCH, BASTARD OR BLADDER. *See* **Phaca.**

VETCH, BITTER. *See* **Orobus.**

VETCH, CHICKLING. *See* **Lathyrus sativus.**

VETCH, CROWN. A popular name for **Coronilla** (which *see*).

VETCH, LIQUORICE. A common name for **Astragalus glycyphyllos** (which *see*).

VEXILLUM. The standard or large posterior petal in a papilionaceous corolla.

VIBORGIA (named in honour of Eric Viborg, 1759-1822, Professor of Botany at Copenhagen). SYN. *Wiborgia*. ORD. *Leguminosæ*. A genus consisting of seven species of South African, rigid, sometimes spiny, greenhouse

FIG. 168. FLOWERING BRANCHLET OF VIBURNUM MACROCEPHALUM KETELEERI.

VETCH, MEDICK. A common name for **Onobrychis** (which *see*).

VETCH, MILK. *See* **Astragalus.**

VEXILLARY. An æstivation in which one piece is considerably larger than the others, and is folded over them, they being arranged face to face, as in papilionaceous flowers.

shrubs. Flowers yellow, in terminal, often unilateral racemes; calyx teeth sub-equal; standard ovate or orbicular; keel incurved; bracts and bracteoles small or inconspicuous. Pods stipitate, flat, indehiscent. Leaves digitately trifoliolate. Only one species calls for mention in this work. It thrives in a mixture of sandy loam and fibry peat. Cuttings of young shoots should be inserted in sandy soil, under a glass, in May.

Viborgia—*continued.*

V. obcordata (obcordate-leafleted). *fl.*, racemes terminal or spuriously lateral, 3in. to 8in. long, densely many-flowered. July. *l.* rather distant; leaflets cuneate-oblong, obtuse or emarginate, the young ones thinly silky, the older ones glabrate. Branches long, twiggy, graceful. *h.* 3ft. to 6ft. SYN. *Crotalaria floribunda* (L. B. C. 509).

VIBURNUM (the old Latin name used by Virgil, &c.). Including *Tinus*. ORD. *Caprifoliaceæ*. A genus comprising about eighty species of mostly hardy, deciduous trees and shrubs, indigenous in North temperate and subtemperate regions and the Andes, rare in the West Indies and Madagascar. Flowers white or pinkish, articulated with the pedicels, one or two-bracteolate, disposed in axillary or terminal, sub-umbellate corymbs or panicles, hermaphrodite, or the outer ones larger and neuter; calyx tube turbinate or ovoid, the limb short, equally five-toothed, persistent; corolla rotate, campanulate, or tubular, the limb of five equal, imbricated lobes; stamens five, inserted in the corolla tube (in one species biseriate); filaments short or elongated; anthers oblong, exserted; disk none. Drupe dry or fleshy, ovoid or globose, terete or compressed, one or spuriously two or three-celled, one-seeded. Leaves opposite, very rarely ternately whorled, petiolate, entire, serrated or dentate; stipules inconspicuous or obsolete, in a few cases ample. The culture is of the easiest description. The species thrive in almost any soil, and may be readily propagated by layering, or by cuttings of the half-ripened shoots, inserted in sandy soil, under handlights, in a somewhat shady position. The best-known species are here described; except where otherwise indicated, they are hardy, deciduous shrubs with white flowers, from North America.

V. acerifolium (Maple-leaved). Dockmackie. *fl.*, cymes small, on slender peduncles. May and June. *fr.* crimson, turning purple, with a flattened stone. *l.* coarsely toothed and somewhat three-lobed, roundish, the base truncate or cordate, the pointed lobes diverging. *h.* 3ft. to 6ft. 1736. (W. D. B. 118.)

V. cotinifolium (Cotinus-leaved). Indian Wayfaring-tree. *fl.* small; corymbs 2in. to 3in. in diameter, generally terminal, dense, the branches stellately tomentose. June. *l.* ovate or elliptic, obtuse at base, nearly entire, rarely coarsely crenate, usually woolly beneath. *h.* 5ft. to 10ft. Himalayas, 1830. (B. R. 1650.)

V. dentatum (toothed-leaved).* American Arrow-wood. *fl.* in pedunculate cymes. June. *fr.* blue or purple, small, ovoid. *l.* broadly ovate, slightly cordate at base, very numerously and sharply toothed, pale, often with hairy tufts in the axils of the straight veins; petioles slender. *h.* 5ft. to 10ft. 1763. (W. D. B. 25.)

V. dilatatum (dilated).* *fl.* ½in. in diameter, very shortly pedicellate; cymes sessile or on stout peduncles, much branched, 2in. to 6in. in diameter. June. *l.* variable, 2in. to 5in. long, orbicular to obovate, usually abruptly and obtusely pointed, coarsely toothed, rounded or cordate at base, slightly hairy; petioles ½in. long. *h.* 10ft. Japan, 1845. A very handsome shrub. (B. M. 6215.)

V. edule (edible). A synonym of *V. Opulus*.

V. Fortunei (Fortune's). A garden synonym of *V. macrocephalum*.

V. Keteleeri. *See* **V. macrocephalum Keteleeri.**

V. Lantana (pliant). Common Wayfaring-tree. *fl.* ¼in. in diameter, all perfect; cymes flat-topped, with stout rays. May and June. *fr.* black, flattened, ½in. long. *l.* broadly oblong-cordate, 2in. to 4in. long, serrulated, rugose, obtuse, exstipulate. *h.* 6ft. to 20ft. Europe (Britain). Shrub scurfily pubescent. (J. F. A. 341; Sy. En. B. 640.)

V. L. follis-variegatis (variegated-leaved). *l.* variegated with white and yellow.

V. lantanoides (Lantana-like). American Wayfaring-tree; Hobble Bush. *fl.* handsome, in very broad and flat, sessile cymes, the outer flowers much the larger. May. *fr.* red, turning darker, ovoid. *l.* round-ovate, 4in. to 8in. across, abruptly pointed, cordate at base, closely serrated, pinnately many-veined, the veins beneath (as well as the stalks and branchlets) rusty-scurfy. 1820. A straggling shrub, the reclining branches often rooting. (L. B. C. 1570.

Viburnum—*continued.*

V. Lentago (Lentago). Sheep Berry; Sweet Viburnum. *fl.* all perfect, in a sessile cyme. May and June. *fr.* black, or with a blue bloom, edible, sweet, oval, ½in. or more long. *l.* ovate, strongly pointed, closely and very sharply serrated; petioles long and margined. *h.* 15ft. to 30ft. 1761. Tree. (W. D. B. 21.)

V. macrocephalum (large-headed).* *fl.* in compound, sub-pyramidal cymes, the neuter flowers large. June. *l.* ovate, flat, obtuse, denticulate, slightly scabrous, beneath (as well as the branches, petioles and peduncles) stellately furfuraceous-pubescent. *h.* 20ft. China, 1844. (B. R. 1847, 43; F. d. S. 263, 264.) SYN. *V. Fortunei* (of gardens).

V. m. Keteleeri (Keteleer's). This is the wild type, and bears the same relationship to *V. macrocephalum* that the wild *V. Opulus* does to the garden *V. O. sterilis*. See Fig. 168. (R. H. 1863, 31.)

V. molle (soft). *fl.* in pedunculate, stellate-pubescent cymes. July. *fr.* purple or blue, ovoid, small, oily. *l.* broadly oval, obovate, or ovate, scarcely pointed, slightly cordate at base, coarsely crenate or repand-toothed, the lower surface, as well as the rather slender petioles and branchlets, softly downy. *h.* 6ft. to 12ft. 1812.

V. nudum (naked). American Withe Rod. *fl.* all alike and perfect; cyme shortly pedunculate. May and June. *fr.* black, or with a blue bloom, globose, sweet, round-ovoid, ¼in. long.

FIG. 169. FLOWERING BRANCHLET OF VIBURNUM OPULUS STERILIS.

l. rather thick, oval, oblong, or lanceolate, not shining, the margins entire, repand, or crenate. *h.* 6ft. to 10ft. 1752. (B. M. 2281; W. D. B. 20.)

V. n. cassinoides (Cassine-like). *l.* more opaque, often toothed. 1761. (W. D. B. 24, under name of *V. squamatum*.)

V. n. Claytoni (Clayton's). *l.* nearly entire, the veins somewhat prominent beneath.

V. obovatum (obovate-leaved). *fl.* in small, sessile cymes. May. *fr.* black, or with a blue bloom, sweet, ovoid-oblong. *l.* obovate or spathulate, obtuse, entire or denticulate, rather thick, 1in. to 1½in. long, shining. *h.* 2ft. to 8ft. 1812. (L. B. C. 1476.)

V. odoratissimum (very odorous).* *fl.* with the scent of *Olea fragrans*; corymbs 2in. to 4in. high, usually pedunculate. May. *fr.* ovoid-oblong, ½in. by ½in., hardly compressed. *l.* elliptic, 5½in. long, acute, cuneate at base, entire or sparingly sinuate-toothed, coriaceous, glabrous; petioles stout, ½in. to 1in. long. *h.* 6ft. to 10ft. Khasia Mountains, China, &c. 1818. Half-hardy. (B. R. 456.)

V. Opulus (Opulus).* Cranberry-tree; Dog Eller; Dog Rowan-tree; Guelder Rose; Marsh or Water Elder; Snowball-tree. *fl.*, outer ones white, ¾in. in diameter; inner ones creamy-white, ¼in. in diameter; cymes sub-globose, 2in. to 4in. in diameter. June and July. *fr.* red, globose, translucent, ¼in. in diameter. *l.* 2in. to 3in. long, three-lobed, stipulate, the young ones downy; lobes unequal, serrated; stipules glandular, adnate to the petioles. Branches slender, lenticellate. *h.* 6ft. to 8ft. Europe (Britain) and North America. (F. D. 661; Sy. En. B. 639.) SYNS. *V. edule*, *V. oxycoccos* (L. B. C. 1123).

Viburnum—*continued.*

V. O. foliis-variegatis (variegated-leaved). *l.* variegated with white and yellow.

V. O. nana (dwarf). A very distinct little plant, scarcely 1ft. in height.

V. O. sterilis (sterile).* Garden Guelder Rose; Snowball-tree. *fl.*, nearly the whole cyme consisting of radiant, sterile flowers, and becoming globular. A very handsome shrub. See Fig. 169.

Viburnum—*continued.*

obtuse or sub-acute, slightly revolute-margined, crenulate-serrulate. Branches terete, erect. *h.* 6ft. to 7ft. Japan, 1875. (B. M. 6172.) SYN. *V. suspensum.*

V. suspensum (uncertain). A synonym of *V. Sandankwa.*

V. Tinus (Tinus).* Laurustinus. *fl.* white, but rose-coloured before expansion, and sometimes a little time afterwards; corymbs flat. December to March. *fr.* dark blue. *l.* ovate-

FIG. 170. FLOWERING BRANCHLET OF VIBURNUM PUBESCENS.

V. orientale (Eastern). *fl.* in terminal, not radiant, corymbs. July. *fr.* oblong, compressed. *l.* three-lobed, acuminate, coarsely and bluntly toothed; petioles glandless, glabrous. *h.* 6ft. to 10ft. Caucasus, 1827, 1868. (R. G. 567.)

V. oxycoccos (Cranberry-fruited). A synonym of *V. Opulus.*

V. plicatum (plaited).* *fl.* radiant, in the cultivated plant all sterile, dilated, and crowded in globose cymes resembling those of the Guelder Rose. May. *l.* rounded at base, ovate or somewhat ovate-orbicular, cuspidate, coarsely serrated, somewhat plicate, dark green, glabrous above, tomentose beneath. *h.* 4ft. to 6ft. Japan, 1846. (B. R. 1874, 51; F. d. S. 278; G. C. n. s., vi., p. 141; L. J. F. 88; L. & P. F. G. 29; S. Z. F. J. 37.)

V. p. tomentosum (tomentose). This differs from *V. plicatum* in its more hairy leaves, and in the sterile flower being generally confined to the outer part of the inflorescence. (S. Z. F. J. 38, under name of *V. tomentosum.*)

V. prunifolium (Prunus-leaved).* American Black Haw. *fl.* in a sessile cyme. May. *fr.* similar to, or rather smaller than, that of *V. Lentago.* *l.* oval, obtuse or slightly pointed, finely and sharply serrated, 1in. to 2in. long. 1731. A tall shrub or small tree. (W. D. B. 23.)

V. pubescens (downy). *fl.* in pedunculate cymes. June. *fr.* dark purple, small, ovoid. *l.* ovate or oblong-ovate, acute or acuminate, the veins and teeth fewer and less conspicuous than in *V. dentatum*, the lower surface and the very short petioles softly downy, at least when young. 1736. Low and straggling. See Fig. 170.

V. rugosum (wrinkled-leaved). *fl.* all fertile; corymbs not radiant; general involucre seven-leaved. December to March. *fr.* ovate-oblong. *l.* broad, ovate, wrinkled, hairy. *h.* 4ft. to 6ft. Canary Islands, 1796. A half-hardy, evergreen shrub, very like *V. Tinus*, but having leaves larger, and hairy all over. (B. M. 2082; B. R. 376; L. B. C. 859.)

V. Sandankwa (Sandankwa). *fl.*, corymbs mostly terminal, sometimes axillary, short, small, erect, trichotomous. June. *fr.* red, globose. *l.* shortly petiolate, ovate or ovate-oblong, oblong, quite entire; ramifications of the veins beneath, as well as the branchlets, glandular-hairy. *h.* 8ft. to 10ft. South Europe, &c., 1596. Evergreen. See Fig. 171. (B. M. 38.)

V. T. Froebelii (Froebel's). A compact form, with lighter green leaves and whiter flowers than the type.

FIG. 171. FLOWERING BRANCHLET OF VIBURNUM TINUS.

Viburnum—*continued.*

V. T. hirtum (hairy). *fl.* appearing in autumn, and persistent through the winter. *l.* oval-oblong, hairy beneath and on the margins.

V. T. lucidum (clear-leaved).* *fl.* and cymes larger than in the type. Spring. *l.* also larger, ovate-oblong, glabrous, shining. Mount Atlas. There is a form having leaves more or less variegated with white.

V. T. strictum (erect). A variety of somewhat erect and fastigiate habit. Gardens. There is also a variegated sub-variety.

V. T. virgatum (twiggy). *l.* oblong-lanceolate, pilose below and on the margins. Italy.

VICIA (the old Latin name used by Virgil, &c.). Tare; Vetch. Including *Ervum*. *Faba* is also included, by the authors of the "Genera Plantarum," under this genus, but is kept distinct in this work. ORD. *Leguminosæ*. A genus comprising about 100 species of mostly hardy, annual or perennial herbs, of variable habit, dispersed over North temperate regions and South America. Flowers often blue, violet, or yellowish-white, axillary, racemose; calyx teeth sub-equal, or the lower longer; standard obovate or oblong, emarginate; wings adnate to the keel; bracts very caducous. Pods compressed, two-valved. Leaves abruptly pinnate; leaflets usually numerous, entire or toothed at the tip; petiole often ending in a tendril. The following species are British: *V. angustifolia*, *V. bithynica*, *V. Cracca*, *V. hirsuta* (Common Tare), *V. lathyroides*, *V. lutea*, *V. Orobus* (Bitter Vetch), *V. sativa* (Common Vetch; Fitch; Fitches), *V. sepium*, *V. sylvatica* (Wood Vetch), *V. tetrasperma*. *V. hybrida* and *V. lævigata*, formerly found in England, are now extinct. *V. sativa* is extensively grown as fodder for cattle. Few of the species are of any horticultural value. Those described below are of simple culture in common garden soil. They may be increased by seeds, the perennials also by divisions.

V. argentea (silvery).* *fl.* pinkish, the tip of the keel spotted with black, secund, rather loose; peduncles many-flowered. June. *l.* cinereous-silvery, without tendrils; leaflets oblong-linear, mucronate. Stem tetragonal. *h.* 1ft. Pyrenees, 1827. Perennial. (B. M. 2946.)

V. atropurpurea (dark-purple). *fl.* purple, secund, approximate; calyx teeth bristly; peduncles many-flowered, scarcely as long as the leaves. June. *l.*, leaflets oblong, mucronate, opposite or alternate; stipules often toothed at base. Stem tetragonal. *h.* 3ft. Algiers, 1815. A villous annual. (B. R. 871.)

V. Cracca (Cracca). Cow Vetch; Tufted Vetch. *fl.* bright blue, ½in. long, drooping; racemes dense, ten to thirty-flowered, unilateral; peduncles longer than the leaves. June to August. *l.* 1in. to 4in. long, sessile, linear-oblong, acute or mucronate. Stems 2ft. to 6ft. long, scandent or diffuse. Europe (Britain). Perennial. (F. D. 804; Sy. En. B. 385.)

V. galegifolia (Galega-leaved). A synonym of *Swainsona galegifolia*.

V. lathyroides (Lathyrus-like). Spring Vetch; Strangle Tare. *fl.* lilac-coloured, solitary, sessile, ¼in. to ⅓in. long; calyx teeth subulate. May and June. *l.* ½in. to 1in. long; leaflets two or three pairs, linear-oblong or obovate, acute, obtuse, or notched. Stem 6in. to 8in. long, spreading. Europe (Britain). A hairy annual. (Sy. En. B. 395.)

V. onobrychioides (Onobrychis-like).* *fl.* purple, distant; calyx teeth lanceolate; peduncles very long, many-flowered. June. *l.* numerous, linear, alternate or opposite, obtuse or mucronulate. Stem striated. *h.* 2ft. South Europe, 1759. Annual. (A. F. P. 42; B. M. 2206.)

V. oroboides (Orobus-like). *fl.* of a very beautiful blue, usually three or four racemes standing together; peduncles many-flowered, axillary. June. *l.*, leaflets ovate, mucronate. *h.* 1ft. to 2ft. Siberia, 1758. Perennial. SYN. *Orobus lathyroides* (B. M. 2098).

V. polysperma (many-seeded). *fl.* pale blue, erect, loosely racemose; calyx teeth unequal; peduncles eight to ten-flowered, and longer than the leaves. June. *fr.*, pods linear-lanceolate, fourteen to twenty-seeded. *l.*, leaflets fourteen to sixteen, ovate-oblong, obtuse, entire, mucronate, glabrous. Tendrils decompound. Stems 6ft. to 8ft. long, much-branched. Naples, 1833. Climbing annual. (S. B. F. G. ser. ii. 274.)

V. sicula (little dagger). *fl.* of a fine purple, large, secund, numerously disposed on pedunculate racemes. May. *l.*, leaflets linear, bluntish, mucronulate, rather silky beneath. Stem tetragonal, almost simple, creeping. 1827. (B. M. 4943 and S. B. F. G. 289, under name of *Orobus Fischeri*.)

V. tenuifolia (slender-leaved). *fl.* violet; calyx teeth unequal; racemes clustered, secund; peduncles many-flowered, longer than the leaves. June. *l.*, leaflets linear, alternate or opposite, nearly glabrous, mucronate. Stems branched. *h.* 1½ft. Germany and Tauria, 1799. Climbing perennial. (B. M. 2141.)

VICTORIA (named after Her Majesty Queen Victoria). ORD. *Nymphæaceæ*. A monotypic genus. The species—a gigantic, handsome, prickly, aquatic, stove herb, with a thick rhizome—is one of the most remarkable productions of the vegetable kingdom. It is found, growing in still water of about 4ft. to 6ft. in depth, in equinoctial America. The peculiar formation of the under surface of the leaves imparts to them great buoyancy—sufficient, for instance, to withstand the weight of a good-sized child sitting in a chair, provided, by means of a flat board, the pressure be equally distributed over the whole of the leaf. In this country, at any rate, it is best to treat the Victoria as an annual, as it is difficult to keep alive during dull, sunless weather in winter. The seeds—which should be kept in a vessel of water until ready for sowing—should be placed in loamy soil, and the pot containing them submerged a couple of inches in a "nursery" tank of water, the temperature of which should not be allowed to fall below 85deg. The tank, too, should be in as light a position, and as near the glass, as possible. It is desirable to sow the seeds in January, and as soon as the seedlings appear, prick them singly into small pots, gradually shifting into larger pots as the plants grow stronger. About the beginning of May, the best plant will probably be ready to place out in the large tank. Two or three cartloads of good, strong loam, with a good proportion of rotted cowdung, will be necessary to enable the plant to attain its full size. After it is fairly established, the temperature of the water may be allowed to fall to 80deg., but not below. All the sunlight possible is needed to keep the plant in robust health, so the house in which it is grown should not be artificially shaded in any way. Where it is practicable to maintain the water of a large tank at the temperature above mentioned, the Victoria may be grown in the open air in places sheltered from the wind, which has—except under such conditions—too much power on the upturned edges of the huge leaves. The illustration represents a plant in the open, surrounded by hardy subjects.

V. regia (royal).* Queen Victoria's Water Lily; Royal Water Lily; Water Maize; Water Platter. *fl.* 1ft. or more in diameter; calyx deeply quadrifid, the tube tawny, very prickly, turbinate, adnate with the ovary, the segments purple-brown, concave, deciduous, rather shorter than the petals; torus annular; petals very numerous, the outer ones white, spreading, oblong, concave, obtuse, the inner ones gradually passing into filaments and becoming deeply coloured with purple or full rose; perfect stamens in about two series, large, fleshy, subulate, gracefully incurved below, the rest erect; peduncles or scapes radical, longer than the petiole, and rising above the surface of the water when in flower, terete, prickly, sometimes 1in. in diameter, single-flowered. Summer. *fr.* a large, cyathiform, truncate, fleshy, green, prickly berry, bearing many oval, very dark brown seeds. *l.* usually floating, 4ft. to 6½ft. in diameter, at first oval with a deep, narrow cleft or sinus at one end, at last almost exactly orbicular, peltate, flat, but having a turned-up margin 2in. to 5in. broad; upper side full green, reticulated; under side deep purple, sometimes green, spongy-pubescent, copiously veined, more or less beset with sharp and horny, subulate prickles; petioles terete, radical, copiously prickly. Rhizome thick. 1838. See Fig. 172, p. 158. (B. M. 4275-4278.)

VICTORIAN DOGWOOD. *See* **Prostanthera lasianthos.**

VICTORIAN HAZEL. *See* **Pomaderris apetala.**

VICTORIPERREA. A synonym of **Freycinetia** (which *see*).

VIEUSSEUXIA. Included under **Moræa** (which *see*).

VIGIERA. A synonym of **Escallonia** (which *see*).

VIGNA (named after Dominic Vigni, Professor at Padua, who wrote a commentary on Theophrastus, in 1625). SYNS. *Callicysthus*, *Scytalis*. ORD. *Leguminosæ*. A genus embracing about thirty species of stove, greenhouse, or hardy, twining or prostrate herbs, inhabiting

Fig. 172. VICTORIA REGIA (page 167).

Vigna—*continued.*

the warmer regions of the globe. Flowers yellowish or rarely purplish, shortly fasciculate-racemose at the apex of an axillary peduncle; two upper calyx teeth or lobes connate or distinct; corolla with two ear-like appendages; standard orbicular; wings falcate-obovate; bracts and bracteoles small, caducous. Pods linear, straight or scarcely incurved. Leaves pinnately trifoliolate, stipellate. *V. sinensis* is largely cultivated in the East; the Chinese cook and eat the pods as we do kidney beans. Seeds of the under-mentioned species may be sown in any fairly good soil.

V. Burchellii (Burchell's). *fl.* purple, on peduncles 3in. to 5in. long, umbellate; calyx deeply four-cleft; wings with an ear-shaped appendage to the claw. Summer. *l.* 1in. to 2½in. long, on petioles ¼in. to ½in. long; leaflets ovate-lanceolate or lanceolate, rigid, bristly-mucronate, glabrous. Stems woody, diffuse, the branches rigid and sub-erect. Cape of Good Hope, 1816. Greenhouse. SYN. *Otoptera Burchellii.*

V. Catiang (Catiang). *fl.* yellow or reddish; corolla twice the length of the calyx, which is less than ½in. long; racemes few-flowered, long-peduncled. July and August. *fr.*, pods 1ft. to 2ft. long, less than ½in. broad, edible. *l.*, leaflets membranous, ovate-rhomboid, entire or slightly lobed. East Indies, &c., 1776. Hardy, low and sub-erect, or tall and twining annual. SYN. *Dolichos sinensis* (B. M. 2232). This has been grown as a vegetable in France under the name of *Phaseolus Riccardianus.*

V. glabra (glabrous). *fl.* yellow, crowded; racemes borne on stout peduncles, which are longer than the leaves. July to September. *fr.*, pods hirsute. *l.*, leaflets ovate or ovate-lanceolate. Southern United States, 1685. Nearly hardy, twining annual. SYN. *Dolichos luteolus.*

VIGNALDIA. A synonym of **Pentas** (which *see*).

VIGUIERA (named after Alexander Viguier, a bookseller, of Montpellier, who wrote a work on Poppies, in 1814). ORD *Compositæ.* A genus comprising about sixty species of greenhouse or half-hardy, erect, branched, annual or perennial herbs, rarely shrubs, inhabiting the warmer parts of America. Flower-heads mediocre, rarely large, pedunculate at the tips of the branches, heterogamous; involucre broadly campanulate or hemispherical, the bracts in three or more series; receptacle convex, conical, or at length oblong, paleaceous; achenes often more or less pilose. Lower leaves (rarely all) opposite; upper ones usually alternate. Only one species calls for mention here. For culture, *see* **Helianthus.**

V. linearis (linear-leaved). *fl.-heads* yellow; involucral scales oblong, leafy-appendiculate at apex. September. *l.* sessile, alternate, rarely opposite, linear, entire, one-nerved, revolute-margined, hispid-scabrous on the nerves. Stems erect, branched, scabrid. *h.* 2ft. Mexico, 1823. Half-hardy perennial. SYN. *Helianthus linearis* (B. R. 523).

V. rigida (rigid). A synonym of *Helianthus rigidus.*

VILFA (of Adanson). A synonym of **Agrostis** (which *see*).

VILFA (of Beauvois). A synonym of **Sporobolus** (which *see*).

VILLA GARDEN. *See* **Garden.**

VILLANOVA (named after Tomas M. Villanova, 1757-1802, Professor of Botany at Valencia). ORD. *Compositæ.* A small genus (six or seven species) of greenhouse or hardy, diffuse, glandular-pubescent herbs, inhabiting Peru, Columbia, and Mexico. Flower-heads yellow, heterogamous, pedunculate, irregularly paniculate or corymbose; involucre campanulate, with a few sub-equal bracts; receptacle small, naked; ray florets ligulate, three-toothed; disk florets five-cleft; achenes glabrous. Lower leaves (or all) opposite, the upper ones often alternate, ternately or pinnately dissected, often few-lobed. *V. chrysanthemoides*, the only species introduced, is a hardy annual. Seeds should be sown on the open border, in April.

V. chrysanthemoides (Chrysanthemum-like). *fl.-heads* 1in. in diameter; ray florets fifteen to twenty; peduncles stout, glandular, naked or with one or more imperfect leaves. September. *l.* alternate, petiolate, 2in. long and broad, twice ternately cut into linear or obovate, laciniate, recurved lobes. Stem grooved, leafy, erect. *h.* 1ft. to 2ft. Rocky Mountains, 1878. (B. M. 6422.)

VILLANOVA (of Ortega). A synonym of **Parthenium** (which *see*).

VILLARESIA (named after Matthias Villarez, a Spanish botanist, Superintendent of the Gardens at Santa Espina). SYN. *Citronella.* ORD. *Olacineæ.* A genus consisting of eight or ten species of stove, evergreen, climbing shrubs or small trees, inhabiting the tropics of both hemispheres. Flowers white; calyx five-parted; petals five ribbed inside; stamens five; cymes small, paniculate or racemose. Leaves alternate, oblong, entire or spinulose-dentate, thickly coriaceous, clear. Only one species has been introduced. For culture, *see* **Olax.**

V. mucronata (mucronate-leaved). *fl.* fragrant, sessile; racemes terminal and in the upper axils, solitary, rarely in twos or threes, 2in. long. September and October. *l.* shortly petiolate, ovate or oblong, mucronate, highly glabrous, shining above, paler beneath, spiny-toothed in young trees, entire in adults. Trunk erect, terete. Chili. Tree.

VILLARIA. A synonym of **Berardia** (which *see*).

VILLARSIA (named in honour of Dominique Villars, 1745-1814, Professor at Grenoble; he wrote on the plants of Dauphiné). SYN. *Renealmia* (of Houttuyn). ORD. *Gentianeæ.* A genus embracing ten species of South African or Australian, marsh-loving, greenhouse herbs. Flowers yellow or white, cymose; calyx five-parted or deeply five-cleft; corolla broadly campanulate, sub-rotate, the lobes valvate; stamens five, affixed to the tube; filaments filiform. Radical leaves long-petiolate, entire or irregularly sinuate-toothed. Stems simple and leafless, or slightly branched and furnished with a few leaves. The following species are known to cultivation, and form elegant subjects when in blossom. Peat and sand form the most suitable compost, and the pots in which the plants are grown should be placed in water. Propagation may be readily effected by divisions, or by seeds.

V. capitata (headed). *fl.* yellow, sessile, in compact, globular or depressed heads about ½in. in diameter, on long peduncles. Summer. *l.* long-petiolate, broadly ovate, orbicular, or reniform, coarsely sinuate-toothed or entire, under 1in. long. Stems slightly branched, leafy, 6in. high. Australia, 1879. (B. M. 6420.)

V. Crista-galli (cock's comb). A synonym of *Menyanthes Crista-galli.*

V. Humboldtiana (Humboldt's). A garden name for a form of *Limnanthemum indicum.*

V. nymphæoides (Nymphæa-like). A synonym of *Limnanthemum nymphæoides.*

V. ovata (ovate-leaved). *fl.* citron-yellow; corolla segments crenate-fimbriate on the margins, pilose at the base within; cymes terminal, raceme-like. June. *l.* clustered, coriaceous, oval, entire. Stems ascending, nearly naked. *h.* 6in. Cape of Good Hope, 1786. SYN. *Menyanthes ovata* (B. M. 1909).

V. parnassifolia (Grass of Parnassus-leaved).* *fl.* yellow; corolla lobes shortly exceeding the calyx. August. *l.* long-petiolate, ovate or almost orbicular, entire or sinuate-crenate, slightly cordate or rounded at base, mostly under 1in. long. Flowering stems 1ft. to 2ft. high, loosely paniculate, leafless except small bracts, or a solitary leaf at the first branching. Australia, 1825. (B. R. 1533, under name of *V. reniformis.*)

V. reniformis (kidney-shaped).* *fl.* yellow; corolla spreading, ¾in. to 1in. in diameter, the lobes copiously bearded or fringed inside at base. July. *l.* in a dense tuft, on long petioles, ovate to orbicular or reniform, more or less cordate at base, entire or slightly sinuate-toothed, mostly 1in. to 2in. long. Flowering stems as in *V. parnassifolia. h.* 6in. to 3ft. Australia, 1820. SYN. *Menyanthes exaltata* (B. M. 1029). The plant figured in B. M. 1328 as *Menyanthes sarmentosa* is only a stoloniferous form of this species.

VILLOSE, VILLOUS. Shaggy; covered with long and soft (not interwoven) hairs or villi.

VILMORINIA (named after Pierre Louis Vilmorin, a French cultivator, who wrote on leguminous plants in 1825). ORD. *Leguminosæ.* A genus containing three species of erect, stove shrubs, natives of San Domingo, requiring similar culture to that recommended for **Clitoria.** The only species introduced is described below; it is probably no longer in cultivation.

V. multiflora (many flowered). Vilmorin's Purple Pea flower. *fl.* purple, in axillary racemes; calyx cylindrical, obtusely four-toothed, sub-bilabiate; petals narrow-oblong, the wings shorter than the keel. May. *l.* imparipinnate; leaflets five or six-jugate, oval, pubescent beneath; stipules rather broad at base, long-subulate. *h.* 6ft. 1826. SYN. *Clitoria multiflora.*

VIMINARIA (from *vimen*, a twig; alluding to the twiggy, leafless branches). Rush Broom. ORD. *Leguminosæ*. A monotypic genus. The species is a greenhouse shrub, with Rush-like stems. It thrives in a mixture of loam and peat. Propagation may be effected by cuttings of half-ripened shoots, inserted in sand, under a bell glass, in April; or by seeds, sown on a gentle hotbed.

V. denudata (naked). Australian Rush Broom; Victorian Swamp Oak. *fl.* orange-yellow, small, in long, terminal racemes; calyx teeth short, equal; petals on rather long claws; wings shorter than the standard; stamens free. August. *l.* alternate, mostly reduced to filiform petioles 3in. to 9in. long, the lower ones on luxuriant specimens occasionally bearing at the extremity one to three oval-oblong or lanceolate, herbaceous leaflets, ½in. to 1½in. long. *h.* 10ft. to 20ft. (or sometimes low and decumbent). Australia, 1780. (B. M. 1190; P. M. B. xiv. 123.)

VIMINEOUS. Having long, flexible twigs or shoots; *e.g.*, many Osiers.

VINCA (*Vinca*, or *Pervinca*, was the old Latin name used by Pliny). Periwinkle. Including *Catharanthus*. ORD. *Apocynaceæ*. A genus comprising ten broadly-distributed species of pretty, stove, greenhouse, or hardy, erect, or procumbent herbs or sub-shrubs. Flowers rather large, axillary, solitary; calyx five-parted, without glands, the lobes narrow; corolla salver-shaped, the tube cylindrical, the five lobes ample; stamens above the middle of the tube, included. Leaves opposite. The best-known species are here described. *V. rosea*, which requires stove or greenhouse treatment, may readily be propagated from cuttings of young shoots, taken off soon after new growth is commenced in spring, and inserted in sandy loam, in a close frame. The points should be taken out as the young plants become established, to make them bushy; the flowers are borne on the new shoots as they lengthen. A compost of fibrous loam and a little decayed manure intermixed is well suited to the requirements of this species. It is not necessary to propagate every year, except for increasing stock: the old plants can be kept through the winter. The hardy Vincas are excellent trailing plants for furnishing banks, rockwork, rooteries, &c., in wild gardens, pleasure-grounds, and woods. They grow in almost any kind of soil, and spread rapidly when once established. Propagated by division: any of the single pieces with roots attached may be dibbled in from autumn until early spring.

V. acutiflora (acute-flowered).* A synonym of *V. media*.

V. herbacea (herbaceous). *fl.* purplish-blue; corolla eight to eleven lines long, bearded in the middle and at the throat. June and July. *l.* elliptic or lanceolate, somewhat obtuse, 1in. long, the margins revolute and slightly ciliated. Stems all fertile, herbaceous, glabrous, declinate, simple. Eastern Europe, 1816. Hardy. (B. M. 2002; B. R. 301.)

FIG. 173. FLOWER OF VINCA MAJOR.

V. major (greater).* Band-plant; Cut-finger. *fl.* blue-purple; calyx lobes ciliated, equalling the corolla tube. April and May. *l.* ovate, or cordate at base, ciliated. Flowerless stems rooting at the tip only; fertile ones erect in flower, elongated afterwards. Europe (Britain), &c. Larger in all its parts than *V. minor*. See Fig. 173. (Sy. En. B. 905.)

V. m. elegantissima (very elegant).* A form with foliage beautifully margined or blotched with creamy-white.

V. media (intermediate). *fl.* blue; corolla 1in. long, the lobes obliquely ovate, acuminate. August. *l.* ovate, narrowed at both ends, highly glabrous, 1in. to 2in. long, ¼in. to ¾in. broad. Sterile stems reclinate; fertile ones nearly erect, 1ft. or more high. Mediterranean region. Hardy perennial. SYN. *V. acutiflora*.

Vinca—*continued.*

V. minor (lesser).* *fl.* 1in. in diameter; calyx lobes glabrous, one-third the length of the corolla tube; corolla blue-purple. April and May. *l.* 1in. to 1½in. long, elliptic-ovate, with glabrous margins, on very short petioles. Stems tough; flowerless ones 1ft. to 2ft. long, prostrate, rooting; flowering ones short, erect. Europe (Britain), &c. (F. D. 1813; Sy. En. B. 906.) Of this pretty plant there are a variegated form, a white-flowered variety, and others with double white and double blue flowers.

FIG. 174. VINCA ROSEA, showing Habit and detached Flowering Branchlet.

V. rosea (rosy).* Madagascar Periwinkle; Old Maid. *fl.* almost sessile; corolla tube 1in. long; throat with a hairy ring over the tips of the stamens, and a slighter one at the narrow orifice; lobes white, with a pink eye, sometimes all rose-coloured or white, showy, obovate. March to October. *l.* long, on short petioles. South Florida, Tropics, 1758. Plant low, erect, puberulent. Greenhouse or stove. See Fig. 174. (B. M. 248.)

VINCETOXICUM (from *vincere*, to conquer, and *toxicum*, poison; in allusion to supposed antidotal powers). ORD. *Asclepiadeæ*. A genus comprising about seventy species of stove, greenhouse, or hardy, erect or twining, perennial herbs or sub-shrubs, inhabiting temperate and warm regions, but rarer in the tropics. Flowers usually greenish-yellow or purplish, sometimes nearly black, in variable cymes; calyx five-parted; corolla somewhat rotate-campanulate, deeply five-cleft; corona affixed to the staminal tube, sub-entire, toothed, shortly five to ten-lobed or nearly five-parted. Leaves opposite or rarely quaternately whorled or alternate. The better-known species are here described. All (except *V. pilosum*) are hardy perennials. They were formerly classified under **Cynanchum** (which *see* for culture).

V. acutum (acute). *fl.* white; petals oblong, obtuse. July. *l.* oblong, ovate-cordate, acute. South Europe, 1596. Twiner.

V. fuscatum (brown-flowered). *fl.* yellow; corolla bearded; umbels simple. July. *l.* ovate. Stems twining at top. *h.* 2ft. to 3ft. South-east Europe, 1817. SYN. *Cynanchum minus*.

V. japonicum (Japanese). *fl.* whitish, on slender pedicels; corolla segments glabrous; cymes shorter than the leaves, loose-flowered. Summer. *l.* rounded, shortly acuminate or retuse, very shortly mucronate, paler beneath, the veins softly puberulous and somewhat velvety. Japan. Plant somewhat twining above. (L. & P. F. G. iii., p. 150.)

V. medium (intermediate). *fl.* white; corolla beardless; pedicels hardly longer than the peduncle; umbels often divided. May. *l.* broadly ovate, obtuse, or ovate-lanceolate, acute. Stems twining at tops. *h.* 2ft. to 3ft. Eastern Europe, &c.

V. nigrum (black). *fl.* brown; corolla bearded; pedicels hardly longer than the peduncles; umbels simple. July. *l.* ovate-lanceolate, acuminate, finely ciliated on the edges, narrower than those of the next species. Stems twining at top. *h.* 2ft. to 3ft. South Europe, 1596. SYN. *Cynanchum nigrum* (B. M. 2390).

V. officinale (officinal). Tame Poison. *fl.* white; corolla beardless; pedicels three times longer than the peduncle; umbels simple. May. *l.* ovate, acuminate, finely ciliated on the edges when young. Stems erect, furnished with a downy line on each side. *h.* 1ft. to 3ft. Europe, 1596. SYN. *Cynanchum Vincetoxicum*.

V. pilosum (pilose). *fl.* white, on short, erect pedicels; peduncles nearly equalling the leaves, many-flowered. July. *l.* ovate,

Vincetoxicum—*continued.*

rounded and mucronulate at apex, rounded or sub-cordate at base. Cape of Good Hope, 1726. Greenhouse, twining sub-shrub. SYN. *Cynanchum pilosum* (B. R. 111).

V. purpurascens (purplish). *fl.* dull purple, on slender pedicels; cymes long-stalked, many-flowered, proceeding from the axils of the upper leaves. *l.* narrow-oblong, mucronate, becoming smaller near the ends of the shoots where the flowers appear. Stems and all the green parts slightly downy; when in flower, becoming weaker, with a tendency to twine. Japan, 1850. Half-hardy or hardy perennial.

FIG. 175. LEAVES AND FRUITS OF THE WILD VINE (VITIS VINIFERA).

VINE (*Vitis vinifera*). The Grape Vine is found growing wild in the temperate regions of Western Asia, Southern Europe, and parts of Northern Africa, and is generally believed to be a native of that part of Asia Minor to the south of the Caucasus and of the

Vine—*continued.*

Caspian Sea. According to De Candolle, in "L'Origine des Plantes Cultivées," it grows there "with the luxuriant wildness of a tropical creeper, clinging to tall trees, and producing abundant fruit without pruning or cultivation (see Fig. 175). . . Its dissemination by birds and other agencies must have begun very early—perhaps before the existence of man in Europe, or even in Asia. . . . Seeds of the Grape Vine have been found in the lake dwellings of Castione, near Parma, which date from the age of bronze . . . and Vine leaves have been found in the tufa round Montpellier—probably deposited before the historical epoch." Records of the cultivation of the Grape, and of the making of wine, in Egypt, go back 5,000 to 6,000 years.

The introduction of the Vine into this country is generally credited to the Romans, in the reign of the Emperor Augustus, about A.D. 10. Vineyards existed in England at a very early period of our history. They are mentioned in the "Domesday Book," and also by Bede, who wrote in A.D. 731. The Isle of Ely was called the Isle of Vines by the Normans, the Bishop of Ely, shortly after the Conquest, receiving as tithes wine made from the Vines grown in his diocese. In the reign of Henry III. we read of vineyards. Malmesbury mentions the county of Gloucester as being, in his time, very rich in vineyards; and there still remain traces of them at Tortworth. The first Earl of Salisbury planted a vineyard at Hatfield, which is noted as being in existence when Charles I. was taken there as a prisoner. There are records of vineyards existing in various parts of Surrey, and a notable one, which is still partly in existence, once flourished at Bury St. Edmunds. Vineyards seem to have been common to all monastic establishments; but the suppression of the latter, and, subsequently, the fact of cheap foreign wines becoming more easily accessible, led, no doubt, to neglect in Grape cultivation.

Of noteworthy Grape Vines, Speechly, who wrote on the Vine at the end of the last century, mentions one that was growing in the open air at Northallerton, in Yorkshire, in 1789, that had covered a space of 132 square yards, and was supposed to have been planted 150 years. During the last century, the cultivation of Grapes seems to have become pretty general; several notable examples being still in existence—as that of the Black Hamburgh Vine at Valentines, Ilford, in Essex, which Gilpin, in his "Forest Scenery,"

Vine—*continued.*

says was planted in 1758. This is stated to be the oldest Vine in England, and to be the parent of the still more celebrated Vine at Hampton Court, which was planted in 1769, and now covers a space of about 220 square yards. Of more modern Vines, the most remarkable examples are those at Cumberland Lodge, Windsor, which annually produce about 2,000lb. weight of Grapes; that at Mr. Kay's, Finchley, covering a house 89ft. long by 18ft. wide; and that at Manresa Lodge, Roehampton, filling a house 224ft. long, the stems extending to 1,365ft.

The Grape Vines of Europe are all varieties of *Vitis vinifera*; whilst those of America belong to *V. Labrusca.*

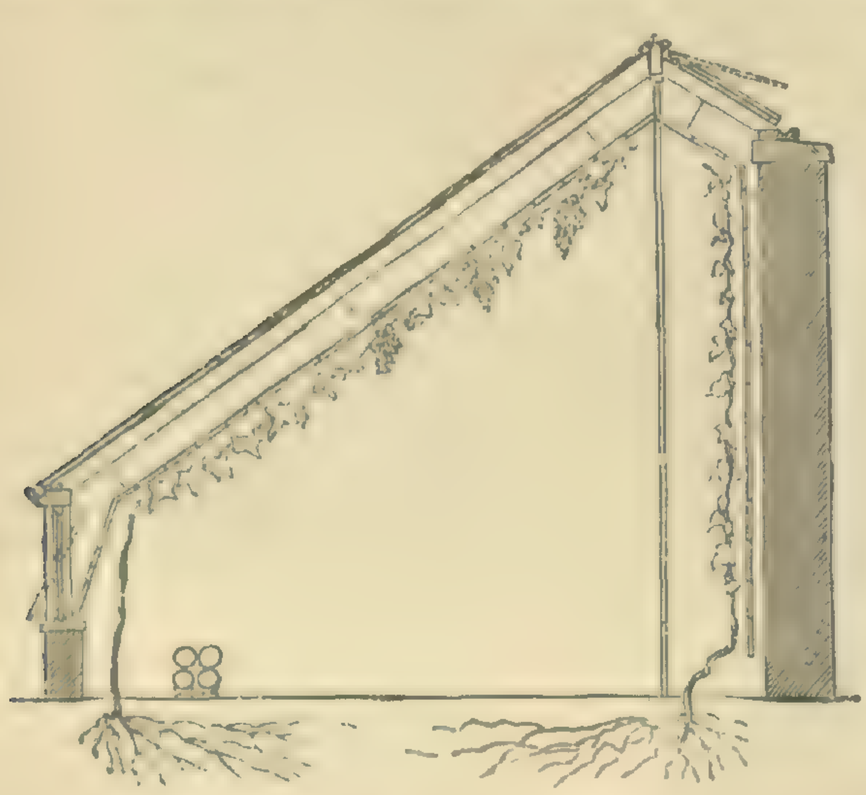

FIG. 176. SECTION OF HIP-ROOFED VINERY.

VINERIES. In regard to these, Vines, it may be remarked, are extremely accommodating, and will grow in any structure sufficiently exposed to the influence of light and air—an essential point. For certain purposes, however, it has been found that some forms are more suitable than others. Thus, for the growth of very early grapes, lean-to houses (see Fig. 181) are most approved. They are naturally warmer, the back wall affording considerable shelter, and require less fixing, &c. For general purposes, the three-quarter span or hip-roofed vinery (see Fig. 176) is much approved, combining the merits of the lean-to, facing the South, with those of the span-roof, generally erected facing East and West. The commonest form, and that most generally erected by the

FIG. 177. SECTION OF SPAN-ROOFED VINERY.

growers for market, is the span-roof (see Fig. 177). Vineries may be of any size that circumstances allow for

Vine—*continued.*

general cropping, but for early grapes, where much fire-heat is required, as well as for keeping late grapes, moderate-sized houses are desirable; and low houses are to be preferred to high ones for general utility and working purposes.

Heating. All structures for the growth of grapes should be efficiently warmed. Artificial heat, in distinction from solar heat, may be supplied either by flues or by hot-water piping. Flues are objectionable on account of the great amount of space they occupy, and the very arid heat they supply, favouring the intrusion of Red Spider, &c. Hot-water is the system now generally adopted. The amount of piping must be regulated by the special requirements in each case. An ample supply is preferable at all times, so as to avoid keeping the pipes at a high temperature, which is injurious.

Ground Vineries. The Vine may be grown in a very circumscribed space, and under very diverse conditions. The cottager with his single rod of ground may, by aid of "old Father Sol" and a few squares of glass, supplemented by care and attention, produce his own grapes nearly equal in quality to those of his lordly neighbour, with his costly vineries and gardening skill. Thanks to the introduction of cheap glass, and the examples of such worthy men as the late Mr. Thomas Rivers, Mr. Wells, Dr. Newington, and Mr. Harrison Weir, the success of ground vineries has been thoroughly established.

The magnificent examples of grapes grown in ground vineries by Mr. Weir, consisting of such varieties as Black Hamburgh, Muscat Hamburgh, Muscat of Alexandria, and especially of Muscat Champion, all of which have been exhibited to the Fruit Committee of the Royal Horticultural

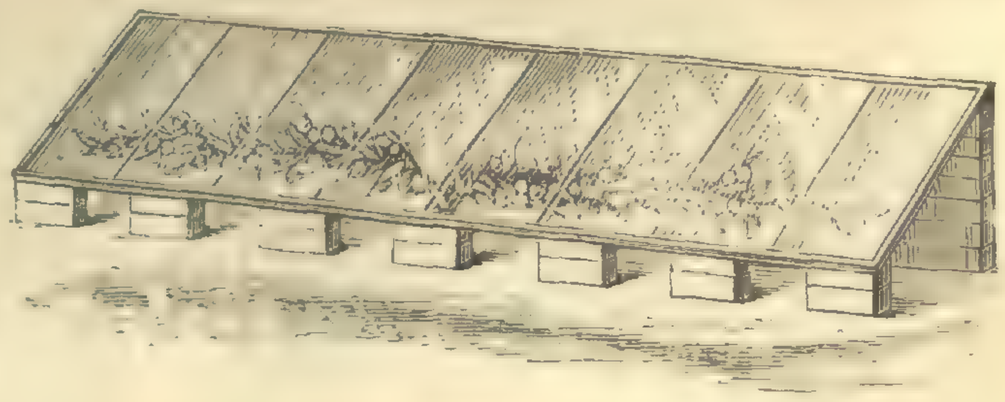

FIG. 178. GROUND VINERY.

Society, proved to be of very superior quality. Fig. 178 represents an extremely simple contrivance. A few plain bricks (or boards) form the back, some 2ft. to 3ft. high, and a simple wall-plate in front, on which the squares of glass are loosely placed, rests on couples of bricks. The structures, however, may be of almost any form, provided the Vine in its growth be thoroughly exposed to the direct influence of the sun's rays. Mr. Harrison Weir prefers a span-roofed structure, 7ft. in length, 2ft. 8in. wide, the sloping sides each 2ft. 8in. deep, and the height in centre, from ground line to ventilator, 1ft. 10in. The ends are of wood, with an air-hole for ventilation, fitted so as to be closed when required. A warm, dry soil, and an open, sunny situation, are of the greatest importance: there would be very little hope of success in a low-lying, cold situation.

The Vines should be planted inside the vinery, and trained along the top to a wire or pole going its whole length, and hung somewhat from it, so that the string or fastening may not be tight. The lights should never be taken off, either in summer or winter, for a permanence, or even left off for a single night, unless the weather be very hot, or for the purpose of ripening the wood. The bunches of fruit should be thinned in the usual way, and not so many left as to retard the ripening.

Vine—*continued.*

Varieties. Nearly all the cool-house Vines, such as Black Hamburgh, Buckland Sweetwater, Foster's Seedling, Madresfield Court, Muscat Champion, Royal Muscadine, and most of the small Chasselas and Frontignans, may be grown in this way, and, in most instances, with great success.

PROPAGATION. The propagation of the Vine, as generally practised in this country, is effected by "eyes." By this term is meant the buds on the ripened shoots of the

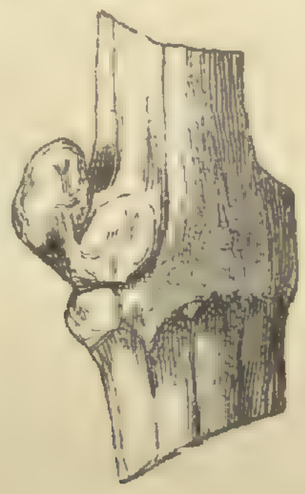

FIG. 179. VINE EYE.

previous season's growth, as represented by Fig. 179. These are cut as shown, about 1in. or more in length, the best-matured wood, having firm, plump buds, or "eyes," being selected. The season best adapted for the operation is during the months of January and February—the earlier the better, so that the plants may have plenty of time to

FIG. 180. VINE EYE STARTED.

grow. A number of small pots or pans should be prepared, and filled with fine soil. A single eye should be inserted in the middle of each small pot, and pressed down until the top of the bud is just level with the surface of the

Vine—*continued.*

soil: in the pans, a number of eyes may be inserted in the same manner, to be potted off singly afterwards. The pots and pans, when filled, should be plunged in a bed having a bottom-heat of about 80deg., and a top temperature of from 65deg. to 70deg., and afterwards gently watered. Many other methods of "putting in" the eyes may be adopted. Great care is required when the buds commence to grow (see Fig. 180), they being extremely liable to "damp off" at this period. As soon as the roots have reached the sides of the pots, the plants should be transferred to larger ones, and plunged in the hotbed, to be repotted again, and so on. Vines may also be layered. This consists in taking a young shoot of a Vine, and pegging it down to the surface of the ground, or on pots; roots are freely produced, every bud becoming a separate plant when severed. In Vine-growing countries the plants are propagated by cuttings—*i.e.*, shoots cut into lengths of from 10in. to 18in., which are frequently planted in their permanent positions at once. Budding and inarching are also practised in various ways. Grafting the Vine is largely adopted where it is desired to introduce new varieties without complete renewal of the plants. The grafting of Vines differs somewhat from that of ordinary grafting—not in the mechanical operation itself, which is practically the same, but owing to the extraordinary flow of sap which occurs in the Grape Vine at the commencement of growth in spring; if any portion of the stem be cut at that time, a very large outpouring of watery fluid takes place, termed "bleeding," which prevents union. It is necessary to defer the operation until this flow ceases, which will be when the first few leaves have become properly expanded. Common whip-grafting is the simplest and best method to adopt. At whatever part of the stock it may be determined to affix the scion, it is necessary to leave a growing shoot and some leaves above this point, for the purpose of drawing off by evaporation the superabundant water that will have to be disposed of, and likewise for forming and perhaps drawing up nourishment for the supply of the scion itself until a union is effected. The scions being affixed, they should be tied securely, and covered with some sort of grafting wax in preference to either clay or moss. *See also* remarks under POT CULTURE.

CULTIVATION UNDER GLASS. The Grape Vine is a remarkably free-growing plant, and naturally requires a great amount of nourishment in the matter of soil, manure, and water, for its successful cultivation. Vine borders require to be constructed with some degree of care. Low-lying situations, with damp, cold subsoils, should be avoided; ample drainage is most essential. The best situation for a Vine border is on a gentle slope, where the ground is drained naturally. In such a situation, if on a gravelly subsoil, little artificial drainage is required. It is well, however, when forming a border, to put in from 1ft. to 1½ft. of broken bricks, &c., as drainage; and in many cases it is expedient to concrete the bottom below this, so as to prevent any possibility of the roots descending. As to the sizes of the border, the roots of Vines travel (if allowed) a great way, and it is necessary to restrict their passage. An ordinary-sized border should correspond to the width of the house; thus, a vinery 16ft. wide may have a border 16ft. wide, and so on. A good practice is to form the border both inside and outside, the front wall being built on arches, so as to allow the roots to go either way (see Fig. 181). The depth of a Vine border should range from 2ft. to 3ft., and need never exceed the latter figure.

Soil. The soil best suited for Vines is a fibry, calcareous, yellow loam—that is, the top spit, or turf cut 3in. to 4in. thick, from some old pasture land. This may vary greatly, from light, sandy loam to that of a clayey nature. Chop the turfs roughly in pieces, and to five or six cubic yards add one yard of old lime

Vine—*continued.*

rubbish or broken bricks, a small portion of charcoal, wood ashes, or burnt soil, and about 2cwt. of ½in. ground bones. These ingredients, well mixed, will constitute the main body of the soil to be used, modified in proportions according to the character of the loam. If the loam used

Vine—*continued.*

the soil, but also for the prevention of evaporation, whereby a greater and more constant degree of humidity may be maintained. Covering Vine borders, excepting where very early grapes are required, is unnecessary. Watering is one of the most important operations; perhaps more Vines are ruined through want of water than from any other cause. During the growing season, Vines can scarcely receive an over-supply. Inside borders require special care and attention in this respect, as they receive no benefit from the rains, and are directly and entirely under the control of the cultivator. When the fruit is ripe, a somewhat drier condition should be maintained, but it is not desirable to allow the soil to become very dry even then.

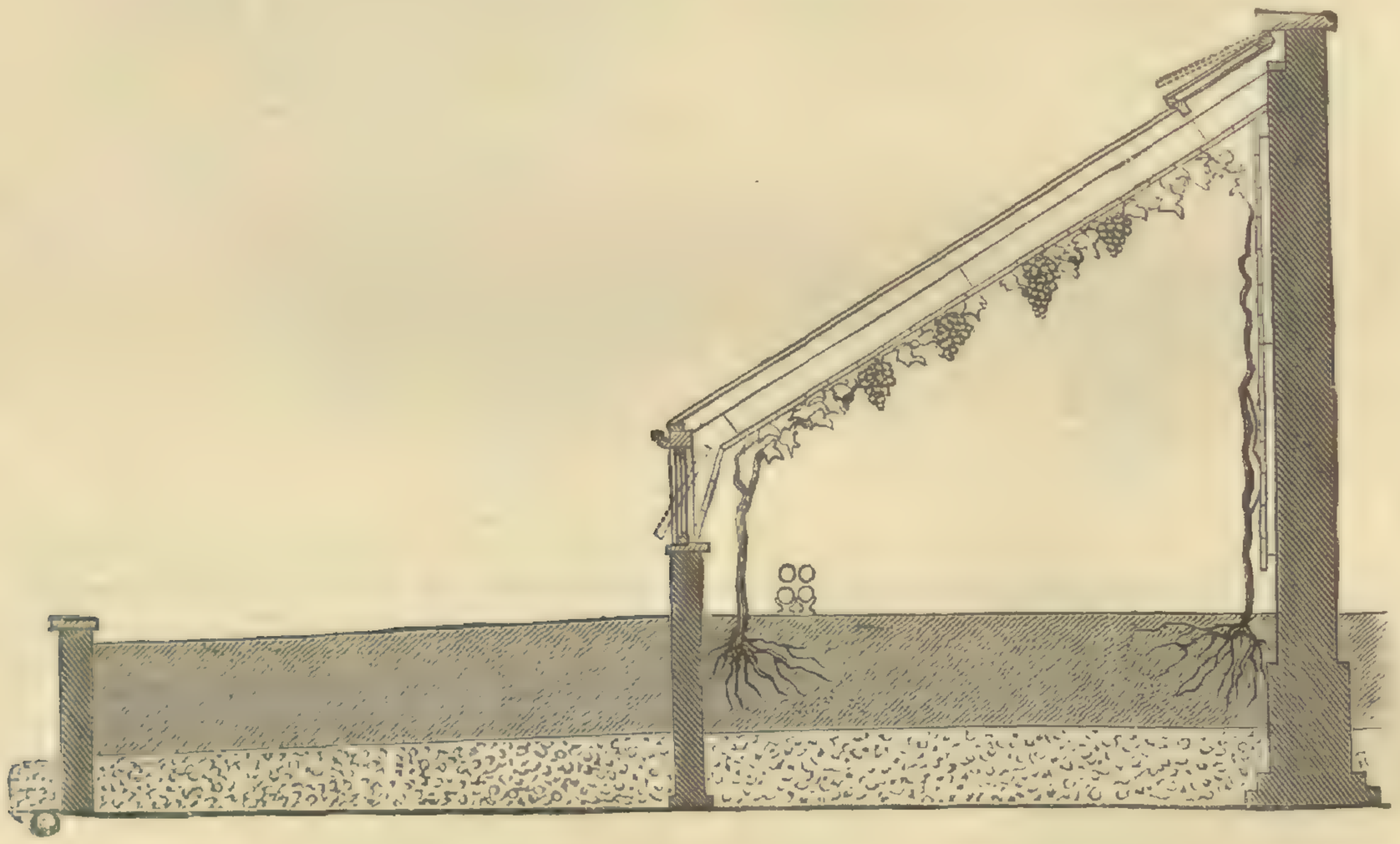

FIG. 181. SECTION OF LEAN-TO VINERY AND OF VINE BORDER.

be of a sandy nature, less of the lime rubbish will be required, as the main object in using this is to give porosity to the soil. The top-dressing of Vine borders is of great importance, and should be attended to every season; the greater the quantity of fresh soil that can be given, the better, especially after the Vines have got into heavy croppings. The soil used for this may be of a somewhat richer character than that recommended for the formation of the border. As much of the old soil should be taken away as can be afforded, and new soil added; or, if the soil cannot be removed, a dressing of some kind of manure should be given, and lightly forked into the border before the Vines commence to grow, in spring.

Manures. For the growth of Vines nearly all soils require the addition of some fertilising ingredients—some kind of manure. Farmyard manure is frequently used; but, as this rapidly decays, its influence is soon exhausted: it can only be recommended for mulching or top-dressing. Bones, as containing phosphate of lime, constitute one of the best manurial ingredients for mixing with the soil; being slow to decay, they continue to afford sustenance for many years. Large, unbroken bones are next to useless. Bone-meal, dissolved bones, and horn-shavings are all valuable ingredients of a similar character presented in a more readily available form, and, consequently, more immediately effective. Potash manures are of special value to Vines: a mixture of ½cwt. of superphosphate to 1cwt. of nitrate of potash, applied at the rate of 1lb. to the square yard, has been found highly beneficial. A very excellent prepared, or what is termed "artificial," manure, now largely used, is Thomson's Vine Manure. Mulching is very necessary in hot, dry seasons, not only as a means of enrichment to

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Planting. Vines may be planted at any season of the year, provided all the requisite conditions be fulfilled. October is a very good period, the soil then being generally in good condition: the roots commence to grow a little, and get, to some extent, established before spring. January and February are another good season. In planting ripened Vines, care should be taken to shake out all the soil from the roots, and to spread these fully out as near to the surface as possible. Another method

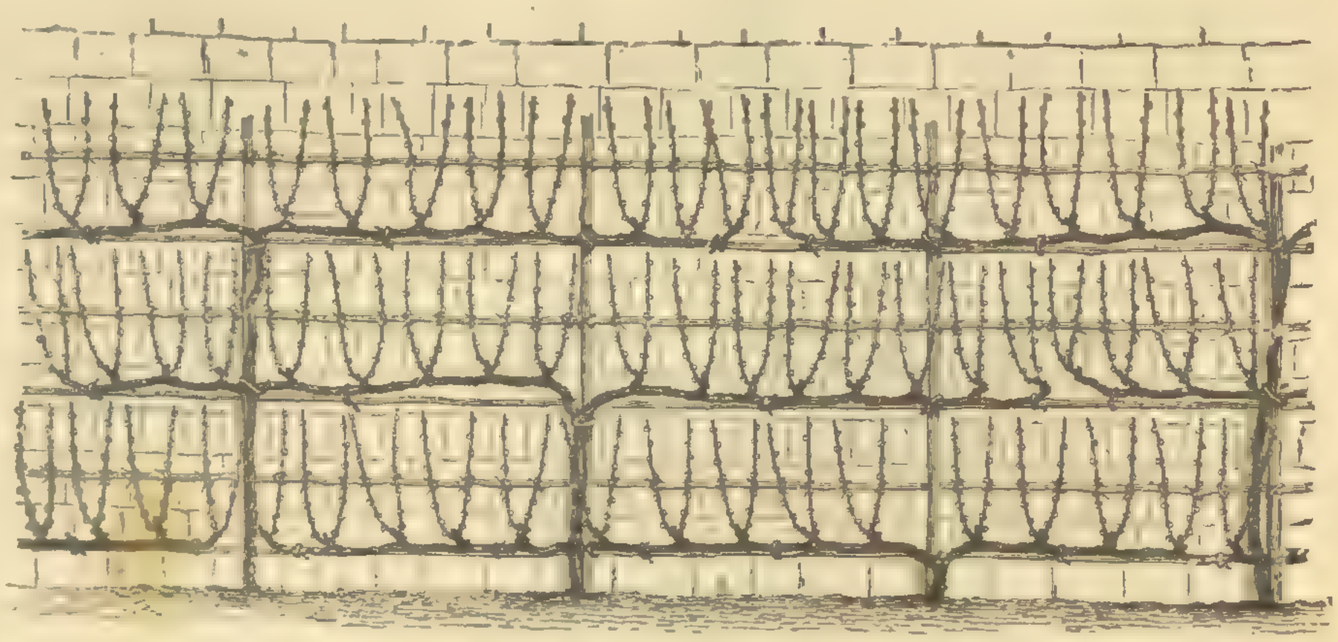

FIG. 182. WALL-TRAINING OF VINES.

Vine—*continued.*

is that of planting the young growing Vines that have been raised from eyes during the same season; this would take place in May, June, or July. These Vines, if properly attended to in regard to heat and moisture, make the very best of plants. As to the distances apart at which Vines should be planted, this almost entirely depends on the style of training to be adopted. They should never be less than 4ft., to allow the side shoots to develop; in many cases, 5ft. is preferable.

Pruning and Training. The Vine is a free-growing, long-lived plant. In its natural state it is of a climbing character, sustaining itself by its tendrils, so that in its cultivated condition it has to be supported in some way. Of the various methods adopted in the training of the Vine, three call for notice here: (1) That practised in the vineyards or wine-growing countries; the young or fruit-bearing shoots are tied to upright poles, 6ft. to 8ft. in height, the plants being about the same distance apart. In other cases they are sometimes pruned into the form of candelabra or other fancy shapes. (2) That adopted for Vines against walls, as practised at Thomery (see Fig. 182). (3) In this country, the Grape Vine is generally trained, in vineries, to trellises fixed at a certain distance from the glass or roof of the house, and is pruned either on what is termed the Spur system, or on that known as the Long Rod system, each of which is subject to all sorts of modifications according to fancy or convenience. The Spur System is that most practised, and may be briefly described thus: The Vines being planted at the proper distances apart, the young plants are cut down to some three or four eyes from the ground; one shoot is trained up in the first season, forming the main stem of the Vine. During the winter season following, this stem is cut back to some 5ft. or 6ft. in length, according to its strength. In the second year, the buds on this stem form shoots on which the fruit is borne, and which are stopped at one or two leaves beyond the bunches, or at a length of 16in. or 18in., the main stem being allowed to extend as before. In pruning, the next winter, these side shoots are cut back to one or two buds, which, being left, form what is termed a "spur" (see Fig. 183), the main stem being pruned back to 5ft. or 6ft. as before. In the third year, one or more shoots are produced from each spur, one of which is selected, trained and stopped as before, and again pruned in winter to one or more eyes; and so on from year to year—in most cases, the Vines filling their allotted space in five or six years. The Long Rod system consists in leaving a number of young shoots or rods to form the bearing shoots, and it is more suitable for some varieties than the Spur system. Vines may be trained to any number of stems or rods, and extended as circumstances may permit, the pruning otherwise being similar.

Disbudding. The first operation that requires to be performed each succeeding year, on the commencement of the growth of the Vine, and to which attention must be early directed, is that which is termed disbudding, but which is, in reality, a thinning-out and regulating of the young shoots. This is an operation of very great importance in respect to young Vines, as upon its being properly performed will depend the future form or character of the plant. Disbudding is, in fact, the first step in training, although it is practised much in the same manner long after the form of the Vine is established. The time for disbudding is as soon as it may be perceived that there are more buds than are requisite—say, when the shoots are an inch or so in length; but the sooner it is done, the better. To allow the superfluous buds to develop into shoots, and then to break them off, is a waste of the energies of the plant.

Vine—*continued.*

In disbudding a young Vine, or a leading shoot of the previous year's growth, the first care should be for the top or leading bud, the growth from which should be carefully tied in and preserved from injury, as forming a continuation of the stem. In the disbudding of a young Vine, we also regulate the number of shoots which form the future spurs. To allow space for the full development of the foliage, these side-shoots should not be less than 18in. or 20in. apart. It frequently happens, especially in the case of slowly-grown Vines, that the buds on the stem are more numerous than the shoots required, and in such cases all superfluous buds must be removed—

FIG. 183. YOUNG VINE STEM—PORTION OF SECOND SEASON'S GROWTH.

A, Properly-pruned Spur. B, Improperly-pruned Spur—*ab*, line showing where Cut should have been made.

"rubbed off," as the phrase is. Nothing is more pernicious in Vine culture than the crowding of the shoots and leaves. It is well, therefore, to make a fair beginning, with the proper number, and this is done by disbudding.

Disbudding, also, at times, takes the place of pruning. If the lower buds of a young Vine-rod do not break

Vine—*continued.*

well, it is a good plan to rub off the higher or top buds, which will induce the lower ones to break stronger. Again, if it has been forgotten to prune a Vine or shoot until it has become too late to do so, on account of the risk of bleeding, the neglect may, to some extent, be rectified by a careful rubbing-off of the buds, as soon as they may appear, to the point to which the shoot ought to have been pruned; and then, when the leaves are about fully developed, the sap of the Vine will be sufficiently diverted, and the shoot may be pruned with safety.

Stopping the Shoots. This is requisite in order to keep the growth within certain limits, and thus to prevent overcrowding and confusion. According to the Spur system, the main stems being from 4ft. to 5ft. apart, the side shoots, on which the fruit is borne, cannot be allowed to extend to more than 2½ft. in length, otherwise they must overlap each other. The length of the shoots is generally regulated by the position of the bunch, the usual practice being to stop them at two joints beyond the bunch, or at one point beyond, if there is not space for a greater extension. Practically, the longer these shoots can be allowed to grow, the better, as the greater the quantity of fully-developed first leaves, the greater the amount of vigour induced. The operation itself should be performed as soon as the shoot attains the requisite length, and is done simply by pinching off the tip, between the finger and thumb, before it has become fully developed. There is thus scarcely anything to take off, no denuding of the Vine of a portion of its foliage, and no consequent check to its growth. It is a very bad practice indeed to allow the shoots to grow to such a length as to render it necessary to use the knife in stopping them. The tendril forming a part of the bunch of fruit should be pinched off at the same time, also all superfluous bunches.

After this first pinching or stopping, the foremost buds in the axils of the leaves again produce shoots, according to their vigour, which are called laterals, or summer lateral shoots. They should be stopped in the same way immediately beyond the first leaf, and so on again and again throughout the season, as they may continue to grow.

The leading shoot of a young Vine is, of course, to be exempted from this stopping, excepting in so far as relates to the laterals it produces; and these, if space is limited, must be stopped in the manner explained, or they may be trained out in the same way as the proper shoots, and allowed to extend and occupy as much space as may be available. It should always be borne in mind that the greater the quantity of fully-developed leaves and shoots, the more powerful must be the root action, and the more vigorous the plant. The stopping of the shoots of a Vine is not a checking or repressing of its vigour, but rather a guiding or directing of its energies into certain channels of a more desirable and beneficial character than those they would follow if left to themselves.

Setting or Fertilisation of the Fruit. If the flowers are not properly fertilised, they will probably fall off, or, perhaps, small berries may be formed; but, as no seed can be produced by reason of non-fertilisation, they, as a consequence, will not grow to their proper size. The impregnating process, in a mechanical point of view, consists of the application of the pollen to the stigma of the flower. It is effected at a very early stage, the little jerk occasioned by the dislodgment of the "cap" or covering causing the pollen-dust to be dispersed. This is generally effected naturally, or without any assistance beyond the maintenance of the proper temperature, atmospheric conditions, &c., and these, of course, vary according to circumstances.

Some cultivators consider it necessary to maintain a very high temperature—from 65deg. to 70deg. by night—

Vine—*continued.*

for the setting of their grapes. This, even if desirable for the forcing-on of the grapes, is not required for the mere "setting" of the fruit. For example, in late houses, and on open walls, the Vines set their fruit quite freely at a lower temperature. Grapes frequently set well at as low a temperature as 45deg. by night. Temperature ranging from 55deg. to 60deg. by night is quite high enough for the mere purpose of setting the fruit, provided there be the desired rise during the day. The setting process takes place in the early morning and forenoon. The temperature by day should always be high by sun-heat. The one great requirement is sunshine, with a fine, mild, bracing atmosphere, so that fresh air in abundance may be admitted to the houses. It is the bracing air, supplemented by the action of sun-heat, which induces the dispersion of the pollen, and by this means effects the setting of the berries.

At times, when sunshine is wanting, it is well to apply artificial assistance, such as "setting" the flowers with foreign pollen, by the aid of a camel-hair pencil. The smallest portion of pollen applied to the stigma will be sufficient; or the plan of smartly tapping the stems of the Vines, so as to shake the bunches, may be adopted, when the pollen will be seen to fly off like a cloud of dust; or, again, recourse may be had to drawing the hand gently over the bunch. The last plan is frequently practised with success amongst the "shy setters."

Certain varieties of Grapes, it is well known, set their fruit freely at all times, and under all sorts of conditions that may be favourable for the Vine. Other varieties do not set freely, whatever may be the reason, and are, in consequence, termed "bad setters." Many and varied conjectures and ideas have been submitted from time to time as to the probable cause of this defect. The pollen and the stigma in some varieties do not ripen at the same time, so that fertilisation cannot take place, and the action of foreign pollen becomes necessary. In other cases the pollen is found to be inert; and some varieties—notably, Black Morocco—have the point of the stigma exceedingly moist, which seems to prevent fertilisation, although this is a condition generally supposed to be favourable for the reception of the pollen.

Attention has also recently been directed to the fact that certain shy-setting Grapes—*e.g.*, Alnwick Seedling, Chaouch, and some American sorts—have the stamens deflexed, or falling away from the stigma, so that they cannot readily be fertilised (the ordinary Vine flower has the stamens erect, and pressing round the stigma). In such cases, the defect of non-setting being due to a structural or constitutional peculiarity, artificial impregnation is the only remedy to adopt.

Thinning the Fruit. The Vine is an extremely fruitful plant; so much so, that were the whole crop of the bunches produced by it allowed to remain, the plant would soon succumb through over-fertility. It is impossible to state how many bunches, or what crop, a Vine should carry, so much depends upon its health and constitution, on its surroundings, and on the subsequent management accorded it. A rule something like this might be laid down: According to the surface of properly-developed leaves, &c., so should be the crop of fruit taken. We know we must have so many good leaves for every pound of fruit. The greater the amount of properly-developed foliage allowed, the better. If we bear in mind that all the colouring and sweetening matter, which goes to the perfecting of the berries, has first to pass through and be elaborated by the leaves, we shall see that without a certain amount of healthy leaf-surface good fruit cannot be produced. A Vine with weak, sickly foliage cannot produce or bear much fruit, and a plant whose foliage gets destroyed by Red Spider, &c., is in exactly the same condition.

Vine—*continued.*

One bunch on each spur would be considered a heavy crop; an average of 1lb. to every foot of rod is about the general quantity left, and is considered an ordinary crop. In thinning the bunches of such free varieties as the Black Hamburgh, every second bunch on each spur should be cut off before the flowers open, and all others which it is desirable to remove as soon as the grapes are set. The thinning of the bunches, as well as of the berries, should be done early. It is a great waste of power to allow that to develop itself which is not required, and which it is known must be cut away; therefore, as soon as the berries are fairly set, thin out—that is, cut off—the supernumerary bunches at once, and commence the thinning of the berries.

The thinning of the berries—or grape-thinning, as it popularly called—is a delicate and somewhat tedious operation. To be expert at this work requires considerable practice. For ordinarily well-set Black Hamburgh grapes, about one-third the number of berries require to be cut out; such varieties as the Royal Muscadine do not require to be so severely treated. It seems to the uninitiated a great sacrifice to cut away so many, the thinned bunch appearing quite a skeleton; but as each berry, when fully grown, should be nearly 1in. in diameter (oftentimes more), there is nothing gained by leaving more than space actually permits. In thinning, first trim the bunch, if required, into proper shape, then continue by cutting out all the inside berries, next all the small berries, and then the side berries. The expert hand will cut these off two or three or more at a time. It will now only remain to regulate the growing berries to the required distance apart.

With larger bunches it is frequently desirable to tie up the shoulders, and so spread the bunch out, or to loop them up to the trellis with S-shaped pieces of thin wire of the requisite length, or to prop the shoulders up from underneath with little bits of wood: the berries, as they swell, lift each other up, and the clusters thus remain compact. Care should be taken not to make the bunches too thin. They should be so thinned that, when ripe and cut, the bunch or cluster may remain firm and compact, whilst every berry has been allowed to develop itself freely to its full size. As a general rule, the Vines require to be gone over twice before the stoning period, and once after, during what is termed the "second swelling," in order to remove all small berries, and otherwise regulate the bunches In the great Vine-growing establishments, the major part of this work is performed by women and young persons.

FORCING. Since the introduction of orchard-houses, ground vineries, and other unheated structures for the cultivation of the Vine, this term, at one time very expressive of a definite condition, has become nearly obsolete. Any means that may be adopted for the forwarding of the growth of a plant to a greater extent than would take place naturally, may be termed forcing. Heat is the motive power. Some Vines are forced in spring, to induce them to commence growth early; others require forcing in autumn, to ripen their fruit. The Vine growing in an unheated orchard-house—that is, not heated artificially—is forced by solar heat to a certain degree.

Vines may be forced into growth, and to bear fruit at any season of the year, provided that the wood is properly ripened. Early-forced Vines of one season force more readily the following year, and established Vines always more easily than young ones. To secure early grapes, say in April, the Vines should be started into growth in November. The time required from the commencement of growth to the ripening of the fruit is, for the Black Hamburgh, about five months. Thus, Vines started in March should have fruit ripe at the end of July, and

Vine—*continued.*

those coming naturally into growth by the end of March, in August and September. The Muscat of Alexandria, Gros Colman, Alicante, Lady Downes' Seedling, and other late grapes, require nearly six months to ripen thoroughly. If, say on January 1, we take as an example a vinery from which ripe grapes are required to be cut in the month of June, the management or treatment necessary to secure this end may be stated in general terms, as follows:

Temperature. At the commencement, a night temperature of about 60deg. will be sufficient until the Vines have started growing. The heat should be gradually raised to 70deg. by the time they come into flower. When the grapes are fairly set, a lower temperature may be maintained until after the stoning period, when, if necessary, a rise of a few degrees may be allowed. When the grapes commence to colour, the temperature may be lower, but fire-heat is nearly always required, in order that a bracing atmosphere may be maintained. For day temperatures a rise of 5deg. by fire-heat may be allowed in dull, cold weather, and of 10deg. or more if by sun-heat, up to 80deg. or 90deg., as the season advances. In very cold weather, however, it is better to have a lower temperature than to maintain a high one by overheated pipes.

Ventilation. The object to be attained by ventilation is not merely the maintenance or regulation of the temperature, but also the admission of fresh air. The night temperature is mostly regulated by the amount of artificial heat applied; but the day temperature, or amount of sun-heat, is regulated by ventilation. In Vineries a little air should be admitted by the top ventilators early in the morning, or as soon as it may be observed that the temperature has risen or is rising above the required point, and this air should be gradually increased as the day and the temperature advance; and soon should be reduced in like manner, endeavouring, if possible, to shut up early enough to secure a slight rise in the temperature after doing so. Closing early at all times, and "bottling up," as it were, the sun's warm rays, is desirable. As the grapes begin to colour, air must be freely given, both by day and by night.

Moisture. This, in its relation to the atmosphere, is of great importance to the healthy progress of the Vine. A close, moist atmosphere is necessary to induce the buds to break freely, and afterwards to assist in supplying nutriment to the Vines through the leaves. Again, moisture is requisite to prevent the destruction of the leaves by insects.

From the commencement, then, a humid atmosphere must be maintained: the higher the temperature, the greater the evaporation, and the greater the amount of moisture required. When the Vines are started, they should be syringed regularly several times a day, especially if the weather be bright and warm, beginning as soon as it is perceived that the temperature is rising, and so on, varying as to time according to season, &c. This treatment may be continued until the Vines come into flower, at which period a somewhat drier atmosphere should be maintained until fertilisation has taken place. Syringing must from this time be discontinued: on account of the lime present in almost all water, the berries become spotted and soiled by its use. Every portion of the house and border, however, should be freely watered at all times, and the atmosphere kept well charged with moisture.

When the grapes are beginning to colour, a somewhat drier atmosphere is required; and by the time they are ripe, the air should be kept as dry and bracing as possible. After the grapes are cut, if it be during the growing season, the syringe should be again freely employed to thoroughly cleanse the leaves and wood, and its use continued until they ripen off.

Vine—*continued.*

POT CULTURE. The growing of Vines in pots is of a twofold character: first, that of producing plants for planting-out, subsequently to be grown as permanent Vines; and secondly, that of producing plants for fruiting in pots. Some cultivators grow the Vines obtained from eyes "struck" in early spring to their "fruiting state" the same season. Others strike the eyes, and grow the plants on so far, and the following year cut down, re-pot, and grow on again, thus occupying two years in producing a similar result. The one-year-old plants, if properly grown, are generally considered the better; but they are only produced under very favourable conditions, requiring an excessive amount of care and attention, and cost, possibly, more than the two-year-old plants, or "cut-backs," as they are familiarly called.

Potting. Liberal pot room must be provided, so as to grow the Vines quickly; therefore, as soon as it is found that the roots have reached the bottom or sides of the pot, re-pot into a 5in. or 48-sized pot, from this, immediately the roots have again reached the bottom, into an 8in., and from this into a 10in. or 12in. pot, which is called the fruiting-pot. This last size will be found quite large enough for all practical purposes. Plants that are intended to be grown the second year need not be potted into larger than 8in. pots. After the last shift, which should not take place later than the beginning of July, when the pots get stored with roots, they should be liberally top-dressed from time to time; this top-dressing will be found to get filled with fibry roots.

Soil. The best, fresh, fibry loam that can be procured, with the admixture of broken charcoal, and a little bone-dust and decayed manure, should be chosen for the first potting; the rougher the condition in which the soil is used, the better. The pots must be carefully and efficiently drained. For the second and third pottings, the soil may be somewhat richer. Top-dressings should consist of half-rotted manure mixed with the soil, together with some horn-shavings or bones. Care must be taken, in potting, to have the soil of the same temperature as that of the houses in which the plants are growing, and the Vines should be potted in the same place if possible, so as to prevent any possibility of chill from exposure, the check to their growth arising therefrom being extremely injurious at this stage.

Watering, &c. Abundance of water is at all times necessary for growing Vines. They should be syringed several times a day, and the atmosphere kept continually charged with moisture. When the fruiting-pots are full of roots, liquid manure should be frequently applied.

Temperature. Vine-eyes, on being struck, should be plunged in a bed having a bottom-heat of 80deg., and an atmospheric temperature by fire-heat of 65deg. or 70deg., which, by sun-heat, may be allowed to rise to 90deg. or 100deg. Too much sun-heat can scarcely be indulged in, if the atmosphere be plentifully charged with moisture. The same regulations as to temperature apply throughout the season, or until the Vines begin to ripen. Bottom-heat is not requisite when the plants attain a large size.

Training, &c. As the young Vines grow, they require to be staked, and to have the tendrils and lateral shoots pinched off as they are put forth. The leading shoot should not be stopped until it has grown to the required length. When the Vines have arrived at their full length, from 6ft. to 10ft. as the case may be, they must be stopped, and the laterals, as they appear, kept closely stopped also to the first leaf, in exactly the same manner as recommended for permanent Vines. When the canes are ripened, which may be in November, they should be at once pruned; that is, all the lateral spurs should be cut off, and the stem cut down to the length required—from 5ft. to 8ft., according to its strength.

Vine—*continued.*

The young Vines, whilst growing, should be kept as close to the glass as possible; and as they increase in length, a good situation for them is along the front of a low pit or house, training the rods to a trellis against the roof. In this manner the whole of the leaves, &c., are fully exposed to the sun's influence, and well-developed fruiting-buds are produced the entire length of the rod.

Ripening the Canes. The ordinary method, towards the end of the season, when the Vines are fully grown and show signs of ripening off, which they will do naturally, is to give gradually more air and less water, and after a short time to allow them to be fully exposed or removed to the open air. The plants, however, should never be allowed to flag or suffer from want of water.

Production of Fruiting Vines in Two or more Years. The treatment required is practically the same as that recommended for the one-year-old Vines, with this difference, that, instead of beginning with "eyes," young plants have to be dealt with. In winter, these young Vines should be cut down to one or two eyes or buds; and in January or February, the pots should be placed in heat. As soon as the eyes have started, the plants should be re-potted, the old soil being shaken out and new soil applied. The smaller the pot that will contain the roots, the better. The plants should be plunged in bottom-heat, and re-potted as required, and as already directed. These "cut-back" Vines, having somewhat the start of the "eyes," generally form the largest and strongest plants. They may be, and sometimes are, grown to a great size, and potted into the largest pots, when they produce enormous crops, some twenty-five or thirty bunches on a single plant, notable examples of which have been often exhibited by Messrs. Lane and Son, of Berkhamsted. Some of these large Vines may be fruited in pots for several years.

Treatment of Fruiting Vines. The forcing of pot Grapes may commence in November, or at any subsequent period. Those selected for early forcing should be the first ripened, and the canes should have been pruned quite a month before their introduction to heat, otherwise they may bleed. The use of well-ripened canes is a most important matter for early forcing.

A low house or pit is the most suitable for pot Vines. They have simply to be placed on a shelf along the front; or the pots plunged in a slight hotbed. The temperature at first should not exceed 50deg. by artificial heat, but must be increased, as the eyes break and begin to grow, to 60deg., and about the flowering period to 70deg. or thereabouts. With sun-heat the temperature should range much higher; but in this respect the treatment of pot Vines as regards general management, atmospheric conditions, ventilation of the house, &c., is exactly similar to that of plants grown in the ordinary Vinery.

After the Vines are placed in heat, water must be very sparingly applied for some time, until the roots commence growing, otherwise the soil will become sour and the roots will decay: it is better to allow them to be a little dry than otherwise. As the plants come into full leaf, a copious supply of water will be required. Whilst the fruit is ripening, extreme care is necessary—especially if the crop be a heavy one—to maintain the Vines in a thoroughly healthy state. Careless watering will destroy the best of crops; more failures are attributable to this cause than to any other. Liquid manure should be frequently given to the healthy plants.

Re-potting is seldom required. The best time to re-pot is about the period of the setting of the grapes, the roots being then in an active state, so that they soon take to the new soil. Top-dressings of soil mixed with horn or bone shavings, &c., should be freely applied.

As to their cropping capabilities, a strong Black Hamburgh Vine, in a 12in. pot, may be allowed to bear 8lb. or 10lb. of grapes—from six to eight fair-sized bunches.

Vine—*continued.*

A Royal Muscadine Vine should bear from ten to twelve bunches; but this is dependent upon the strength and health of the plant.

The ordinary or utilitarian method is to train Pot Vines to a fixed trellis, the plants being placed about 2ft. apart, so that when the side shoots with the fruit, &c., are trained out, the whole trellis may be covered. Another mode is to twist the canes coil fashion round two or three strong

FIG. 184. FRUITING POT VINE.

stakes placed in the pot (as in Fig. 184), thus giving the plants, when fully grown, the appearance of columnar bushes. Another mode is to train the shoots so as to form a sort of umbrella-shaped head, with the bunches hanging round. These latter are all more or less graceful and ornamental.

Varieties. The varieties best suited for fruiting in pots are the free-bearing kinds, such as Alicante, Black Hamburgh, all the Chasselas group, Foster's White Seedling, Madresfield Court, Royal Ascot, and Royal Muscadine. The Muscat of Alexandria is difficult to cultivate in pots, and Gros Guillaume scarcely shows any fruit at all.

CULTIVATION ON OPEN WALLS. Grapes were, at one time, much more extensively grown in the open air in this country than they are at present. This may principally be ascribed to the following causes: (1) The introduction of cheap glass, whereby structures for the cultivation of the Grape Vine with a considerable degree of success, may be erected at a moderate cost. In olden times, the seasons were not always propitious and suitable for Vine-growing any more than they are at the present day, although we read accounts of some very fine fruits having been grown on open standards in 1818. (2) The Mildew, the intrusion of which scourge to the Vine, in the year 1847, has rendered its cultivation in the open air in this country extremely precarious. Although sulphur is well known as a remedy, its application to Vines in the open air is not so easy to accomplish, and, therefore, the results are not so effectual as could be desired. It is very seldom now that outdoor grapes entirely escape this malady. (3) A series of cold, sunless seasons, in which the outdoor

Vine—*continued.*

grapes have seldom ripened, so that their cultivation has gradually come to be nearly abandoned. If a little more attention to the proper culture of the plant, and to the thinning and taking care of the fruit, were given, no doubt better results would follow; and it seems a pity we do not see Vines more frequently adorning the walls of our cottage homes in the more southern parts of the country. There the Grape Vine would be not only ornamental but useful. As a plant it is perfectly hardy, and it grows freely. In spring the young shoots are sometimes injured by late frosts, and in cold seasons the wood does not ripen thoroughly, but it is the fruit that is tender, and that only in so far as it generally requires more heat than our climate affords to ripen it.

Soil. The Vine will grow in any good garden soil which is freely exposed to light and air, and well drained; the more of a loamy character it has, and the fresher it is, the better. Before planting, the soil should be well dug or trenched to a fair depth, and some well-decayed manure, ground bones, &c., applied.

Position. This must be warm and sheltered—a wall facing the south, or a roof sloping in the same direction. Any other aspect is useless.

Planting should be done early in the autumn, so that the roots may get into action before winter.

Pruning and Training must, to a certain extent, be very similar to the practice adopted under glass. Vines to be trained to single stems should be planted about 2ft. apart, and pruned on the spur system. It is preferable, however, to allow Vines on open walls to cover a greater space, and to have many stems or branches. These may be trained in an upright direction, at about 1½ft. apart, and may be pruned on the spur system; another method is that of training the stems in a horizontal direction. Thus, at the first pruning, the Vine is cut down to a height of about 1½ft., and three shoots or stems are trained up the first year. At the winter pruning, one of these stems is trained out horizontally to the right, the other to the left; these, being pruned according to their strength to 4ft. or 5ft. in length, form the first or lower tier of branches on which the fruiting shoots or spurs are to be produced. The third shoot is trained upright; if strong, it may be pruned to 4ft. or 5ft. long, and the following season one or more side branches may be added in a similar manner, the distance apart being 18in. or 20in. The fruit-bearing shoots may be about 1ft. apart, and should be nailed in on the upper side of the stems only. Vines so trained may be extended to any distance, and pruned in winter in the usual manner. Disbudding must be carefully attended to, and the bearing shoots regularly stopped at one leaf beyond the fruit; and all the lateral shoots subsequently produced must be carefully removed.

To secure the best results, the bunches and berries should be carefully thinned, and, in the case of white grapes, fully exposed during the ripening period to the rays of the sun. If long, straggling bunches are produced, it is better to shorten them, as short, compact bunches ripen best.

Varieties. The greater portion of the Sweetwater section, with a few of the smaller Muscats, will be found more or less suitable for cultivation in the open air. In France the variety met with is invariably the Chasselas de Fontainebleau, which in this country is known as the Royal Muscadine. As grown in France, with the beautiful cinnamon-russet colour, it is very rich and pleasant. The Royal Muscadine is, at the present time, the leading grape for outdoor culture. A much better variety, not yet sufficiently well known, is the Chasselas Vibert, which produces larger berries, and ripens about a fortnight earlier, than the Royal Muscadine; Ascot Citronelle, Black July, Espiran, and Grove End Sweetwater, may also be recommended. In some

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Vine—*continued.*

warm seasons, the Black Hamburgh ripens its fruit very well.

KEEPING THE FRUIT. Grapes, unlike most other kinds of fruit, will keep in a ripened state, and in a usable condition, on the plant for a long time, a certain amount of nourishment being necessary to the maintenance of the berries in a properly fresh and plump condition. If severed from the Vine, they soon shrivel or decay, unless the stalks be placed in water, or sustenance be provided in some other way. Properly ripened, and placed under favourable circumstances, grapes will keep in excellent condition for a long time. Some varieties possess this keeping property to a greater extent than others. The fact of being thus able to keep ripe grapes prolongs the season of their use, and assists in maintaining a continuous supply.

The cultivation of the Vine in glass-houses is the primary means by which we are enabled thus to keep its fruit. Grapes grown in the open air cannot be preserved for any length of time on account of the weather, but in vineries they are under control. Houses, therefore, that are required for late or keeping grapes should be so constructed as to meet the special requirements of the case; and these are an equable temperature and a dry atmosphere, which are maintained by proper heating powers and thorough ventilation.

Grapes that are required for late use should be ripened by the end of September. When the fruit becomes ripe, the most active period of the growth of the Vine is past; but it is not well, although a very old custom, to keep the borders and the roots dry. The artificial drought is injurious to the roots, which are still in action, and not beneficial to the fruit, for the longer the foliage can be maintained fresh and green, the better the grapes will keep. Constant supervision is necessary, and great care should be taken to remove any decaying berries, keeping the temperature as near 45deg. as possible.

Ripe grapes may be kept in good condition on the Vines until March, or later if carefully shaded from the sun, and a cool, dry atmosphere be maintained. If allowed to hang until the rise of the sap, the operation of pruning is likely to be injurious to the Vines.

Bottling Grapes. Grapes may be cut from the Vines, and, having their stalks placed in bottles of water, may be kept in a fruit-room, or other suitable apartment, in almost as perfect a condition as those that are allowed to hang on the Vines; and where the quantity is limited, this can be done at much less expense. Further, they may thus be preserved to a later period than it is possible to keep them on the Vines. This is a method of keeping grapes that has been for some time adopted in France, although it was scarcely known in this country until brought under notice by Mr. Robinson, in his "Parks, Promenades, and Gardens of Paris," in 1869. It is now, however, adopted, with modifications, in many establishments in this country. The originator of the system was M. Rose-Charmeux, of Thomery, who had a small room in his house fitted for the purpose, from which light and air were, as far as possible, excluded.

One of the best examples of this method is that used at Ferrières, near Paris, the seat of Baron Alphonse de Rothschild, where M. Bergmann, the excellent gardener, has a grape-room specially fitted for the purpose, and in this all the grapes are placed as they become ripe. Fig. 185 is an illustration of his mode of fixing the bottles, and Fig. 186 shows the arrangement of screens or partitions adopted within the room for the convenient stowage of the bottles when in use.

The ordinary fruit-room will not answer for this purpose; the grapes cannot be kept with other fruits,

Vine—*continued.*

as they require special provision made for them. A thoroughly dry, close, dark room, wherein an equable temperature of 40deg. to 45deg. can be maintained, is what is required. Dryness is the first consideration, so, if a separate room has to be constructed, it should be built with hollow walls and a double set of doors, in order to counteract the effects of fluctuations in temperature and moisture. The grapes intended to be thus kept should be cut with a considerable portion of the shoot attached, and the end of the shoot placed in a

FIG. 185. MODE OF FIXING BOTTLES FOR GRAPES.

bottle filled with pure water. Opinions differ as to whether the fruit is deteriorated in quality by being thus kept. It is obvious that support is derived from the water, and this subsequent absorption of water can scarcely act otherwise than to reduce the amount of saccharine properties in the fruit.

The best late-keeping Grapes are those varieties having thick skins, viz.: Alnwick Seedling, Gros Colman, Gros Guillaume, Lady Downes' Seedling, Muscat of Alexandria, Trebbiano, West's St. Peter's, and White Tokay. It is

FIG. 186. SECTION OF PORTION OF UPRIGHT FOR SUPPORTING BOTTLE-RACKS.

difficult to keep Black Hamburgh Grapes in good condition on the Vines after Christmas; but if cut before that time, and placed in bottles, they may be had in a sound state during the month of January.

DISEASES, &c. These have been far more studied in France and in other Continental countries, than they have been in England, since in the latter country Vines are more especially luxuries, grown in greenhouses; while on the Continent they are among the most valuable of cultivated plants, and their destruction from any cause may mean ruin to their cultivators. Hence, the greater part of our information with regard to the diseases of Vines,

Vine—*continued.*

and the appropriate treatment for each, is due to the researches of French and German biologists. The causes of disease are various, including excess or defect of warmth, moisture, exposure to light, and food, defective ventilation of vineries, attacks of Fungi and of insects and other animals. Two diseases to which Vines are liable have been already treated of under **Shrivelling** and **Sun-burning**. The former is due to insufficient supply of water, either because of its deficiency in the soil, or because of the roots failing to transmit a proper amount to the leaves and fruit. The latter may be due to the roots being too few for the necessities of the plant, or to coldness of the soil after the air of the vinery has induced active growth in the young shoots and leaves. The plants may also suffer, in ill-ventilated vineries, from "sun-burning" of the leaves, small portions becoming brown and dry, in the manner described under **Sun-burning.**

Bleeding. A term applied to an overflow or outpouring of watery sap, although there is no real analogy between this flow of water and the efflux of blood in animals. The Vine is furnished with an enormous supply of this watery sap, which flows very freely, and with great force, shortly after growth commences, until the plant gets into full leaf. The cause of bleeding is late pruning or otherwise cutting the Vine at this period. This loss of sap is sometimes excessive, and is then injurious to the Vine. There is no ready means of arresting the flow when once it has commenced. To avoid its occurrence, Vines should be pruned early.

Shanking. One of the most perplexing maladies that affect the Vine. The term is used to denote the drying-up or withering of the stalks of the bunches or berries; the berries that thus shank, or lose the vitality of their stalks, become intensely sour, and never ripen. Sometimes, it is only a few berries; in other cases, it is the whole bunch, or maybe the entire crop. Many and varied opinions as to the causes of shanking have been advanced. In a broad sense, it is, no doubt, the result of some overstrain, some bad condition of, or injury to, the feeding or respiratory organs of the plant—either the foliage has been in some way injured or prevented from performing its proper functions, or the roots have got into bad condition, and cannot perform theirs; or it may be due to a combination of both these causes. As to the more immediate causes, we note the following: Over-cropping; the destruction of the foliage by Red Spider or other agency; the stripping-off of a great quantity of leaves at one time, as is frequently done by those who neglect timely stopping; chills, or sudden changes of the temperature of the house; the roots getting into a cold subsoil, or the border becoming wet and soddened, &c.; planting in borders composed of too rich materials; excessive dryness at the roots, such as to cause injury to these organs, &c.—all of which should be avoided.

Adventitious or Air Roots. These are so called from their being produced on the stem of the Vine, and suspended in the air like so many threads. They are of the same character as the proper roots, only requiring to be brought into contact with the soil to become such. Air roots are sometimes produced in great profusion from every part of the stem, frequently attaining 1ft. or more in length, and so give the Vine a strange appearance. There is no particular harm in these adventitious roots, *per se*, but their presence betokens a want of proper action on the part of the true roots running naturally in the soil. They are a sign of bad health, and are frequently the precursors of shanking; they give evidence that the proper roots are not in a condition to supply the great demands of a large expanse of foliage, &c., and that, aided by a warm, moist atmosphere within the house, Nature is trying to supply this want. Close warmth and moisture will induce the formation of such roots from Vine-stems

Vine—*continued.*

at any time; but if the true roots in the border are in a perfectly congenial condition, no air or adventitious roots will be produced in any ordinarily well-managed vinery. They are, in short, mainly the result of the roots being in a cold, wet border. To prevent their formation, or to recover Vines subject to this evil, the amelioration of the borders must be effected, by taking up the Vines, examining the condition of the drainage, renewing it if found necessary, and adding fresh soil. Some varieties of Vines, such as those of the Frontignan class, being of a tenderer constitution, are more subject to the formation of air roots than others. When such roots are produced, they need not be cut off, except for appearance' sake, for they will wither and die as the wood ripens.

FUNGI as causes of disease are treated of under **Vine Fungi.**

ANIMAL PESTS. The animals, &c., destructive to Vines are numerous, and the number recorded as hurtful is being added to almost every year in Europe and elsewhere; especially is this the case in America, on which continent animal pests are even more abundant and varied than in Europe. By far the most dangerous insect-foe is the *Phylloxera vastatrix*, of which a full account is given (with a statement of the appropriate remedies to be employed against it) under **Grape or Vine Louse.** This insect has destroyed the contents of many vineries in Britain, and has devastated extensive vineyards in many parts of the Continent. It has been peculiarly destructive in France. Its galls on the leaves are usually very numerous and very conspicuous; but the less prominent root-galls are even more fatal to the Vines. In mid-Europe, a Gall-midge (*Cecidomyia œnophila*) produces galls on the leaves not unlike those of *Phylloxera*; but an examination of a gall will disclose the Midge larva in the central cavity. This Midge has not been recorded as British. The stems and branches are liable to be infested by certain species of **Scale Insects** (which *see*) on the American and European continents, but none have yet been recorded from Britain. Several kinds of Beetles, besides Weevils (*see* **Vine Weevils**), do considerable injury to the leaves and the young twigs, the more noteworthy being *Anomala Frischii* and *A. Vitis*. They resemble Cockchafers a good deal in form, but are only about ½in. long, and are usually satiny or metallic green or blue, with a clay-yellow band round the sides of the thorax. Both they and the Weevils are found more or less frequently in England, and may prove injurious in vineries. When hurtful, their numbers may be reduced by the methods detailed under the headings quoted. Many species of *Lepidoptera* feed on Vines; they are discussed, and remedies are given, under **Vine Moths.** *Aphis* (*Hyalopterus*) *Pruni* is recorded in Buckton's "British Aphides" as living on Vines, as well as on other plants. For appropriate treatment, *see* **Aphides.**

Among Mites, the worst foe to Vines is the Red Spider (*see* **Tetranychus telarius**), which sometimes seriously injures the plants at the period of setting of the fruit, when the supply of water is limited, to improve the flavour. When the attack is severe, the leaves may be so seriously injured that the fruit cannot be properly matured. The Mites may be destroyed by the methods detailed under **Tetranychus telarius.** It is important, as a preventive of attacks, to allow the roots a good supply of water, and to keep the atmosphere of the house sufficiently moist while the grapes are forming, the amount of water being reduced only after they are beginning to colour. Another Mite that does harm on the Continent of Europe is *Phytoptus Vitis* (*see* **Mites**), which causes a dense growth of pale hairs to appear on the lower surface of the leaves, either in isolated patches, or almost covering the whole surface. This growth was formerly regarded as a Fungus, and was

Vine—*continued.*

named *Erineum Vitis*, or *Phyllerium Vitis*. The plants may be only slightly weakened by these growths; but in bad attacks the leaves are unable to do their work in the nutrition of the Vines, which suffer in consequence. The best remedy is picking off, and burning, the diseased leaves.

The last animal to which we shall refer as causing diseases in Vines, is a Nematoid Worm (*Heterodera radicicola*) This is nearly related to *H. Schachtii* (mentioned under **Nematoid Worms**); and, like that species, it produces small swellings on the roots of very many kinds of plants, including Vines, which become much weakened, or are killed by them. The only remedy, so far as is known, is to carefully remove, and to burn, the diseased plants, so as to prevent the evil from spreading.

SORTS. The varieties of Grapes, like those of all other cultivated fruits, are extremely numerous. In its wild state, the Vine exhibits considerable variation, and under cultivation, in the different climates and countries, sorts obtained from seed have been selected as suited to special conditions and requirements. Thus, in some parts thin-skinned, fleshy grapes prevail, and in others, possessing a warmer and drier climate, the thick-skinned varieties preponderate. In the various wine-growing countries distinct classes of grapes seem to exist, whilst those of America belong to a distinct species, *Vitis Labrusca*. It is altogether impossible to estimate the number of varieties existing. In this country, grapes being exclusively grown for dessert, the number of varieties in general cultivation is comparatively limited. Miller, in 1768, describes 18 sorts; Speechly, in 1791, records 50 sorts; Forsyth, in 1810, 53 sorts; Thompson, in the Horticultural Society's Fruit Catalogue, in 1831, records 182 names; Dr. Hogg, in the "Fruit Manual," 1875, describes 143 varieties; and in Barron's "Vines and Vine Culture," 100 varieties are fully described, and mostly illustrated, all of which have fruited in the Royal Horticultural Society's Gardens, Chiswick, and from which the following selection has been made, comprising nearly every variety that is worthy of cultivation:

Varieties of European Grapes
(*Vitis vinifera*).

Until a few years ago, the Grapes grown in this country were entirely selected from other countries, but of late years several remarkably fine varieties have been raised in Britain, by careful hybridisation, and are now being introduced in the wine-growing districts.

Aleppo. Fruit variously coloured, some being black, others green or striped with black, small, round, having a singular appearance; flesh soft, sweet, watery; bunches small, loose. An early Sweetwater Grape.

Alicante. Fruit quite black, with a thick bloom, large, of a true ovate shape; flesh squashy; flavour somewhat earthy, unless well ripened; skin thick and leathery; bunches large, averaging from 2lb. to 6lb. in weight, very broadly shouldered, conical and regular, closely set; stalk very stout. Late. Very handsome, and easily cultivated.

Alnwick Seedling. Fruit black, covered with a thick bloom, large, roundish-oval; flesh firm; flavour strong, sparkling, tolerably rich and sweet; skin thick and tough; bunches large, broadly shouldered, bluntly conical, shy setting. A good, useful, very free-fruiting, late Grape, which keeps well.

Anger's Frontignan. Fruit purplish-black, with a thick bloom, small, round; flesh firm yet tender, juicy, very sweet and rich, having a strong Muscat flavour; bunches small, tapering, very compact, closely set. Early.

Aramon. Fruit purplish-black, medium-sized, round; flesh firm, having a fine, brisk flavour; bunches long-tapering; stalk extremely brittle. Late. Second quality.

Vine—*continued.*

FIG. 187. BLACK CORINTH GRAPES.
Bunch, one-third natural size; Berries, full size.

Ascot Citronelle. Fruit pale greenish-yellow, small, roundish-ovate; flesh soft, juicy, very sweet, and richly flavoured. An early Muscat Grape, ripening several weeks before the BLACK HAMBURGH.

FIG. 188. BLACK HAMBURGH GRAPES.
About one-fourth natural size.

Ascot Frontignan. Fruit pale greenish-white, small, round; flesh firm, sweet, and with a strong Muscat flavour; bunches small, somewhat loose and straggling. Early.

Vine—*continued.*

Auvergne Frontignan. Fruit clear white, changing to amber when fully ripe, medium-sized, round; flesh firm; flavour extremely rich and pleasant; bunches long-cylindrical, closely set. An excellent, early Muscat Grape for growing in cold houses.

Barbarossa. *See* **Gros Guillaume.**

Black Corinth. Fruit purplish-red, quite small, round; flesh sweet, juicy, and without seeds; bunches small, tapering. This interesting variety is the Sweetwater Grape producing the currants of commerce, and is largely cultivated in several parts of Greece. It is also known as the CURRANT GRAPE, ZANTE CURRANT, &c. See Fig. 187.

Black Frontignan. Fruit purplish-black, small, round; flesh very firm, with a fine, brisk, rich, sparkling flavour; bunches small, cylindrical, close and compact. An early Muscat Grape, useful for growing in cool houses.

Black Hamburgh, or **Frankenthal.** Fruit deep bluish-black, covered with a fine bloom, large, roundish-ovate; flesh firm, yet tender, juicy, and with a pleasant, rich flavour; bunches medium, ovate, with broad shoulders, compact. A mid-season Sweetwater. This is the chief Grape in cultivation. See Fig. 188.

Black July. Fruit deep purple, small, round; flesh sweet, juicy, not rich; bunches small, loose. An early Sweetwater Grape.

Black Monukka. Fruit purplish-red, small, long-ovate, or in shape like an acorn; flesh firm, tender, seedless, very sweet and pleasant to the taste; bunches very large, long-tapering. A distinct Sweetwater variety, of Indian origin. See Fig. 189.

Black Morocco. Fruit purplish-red, large, long-ovate; flesh very firm, juicy, with a rich, sparkling flavour; bunches large, long-tapering, generally badly set. A handsome, late Grape.

Black Prince. Fruit deep bluish-black, with a thick bloom, medium-sized, ovate, always well set; flesh dark, juicy and sweet, but not rich; bunches very long-tapering. A handsome, early, free-fruiting Sweetwater Grape.

Buckland Sweetwater. Fruit pale green, becoming almost white when over-ripe, large, round; flesh juicy and watery, with a pleasant, sweet flavour; bunches medium, short, broadly-shouldered. A free-fruiting, mid-season Grape, which sets well.

Canon Hall Muscat. Fruit pale straw-coloured, large, round; flesh firm, yet very juicy, with a strong Muscat flavour; bunches large, straggling, very frequently badly set. An extremely handsome, mid-season Grape, but somewhat difficult to cultivate.

Chaouch. Fruit clear straw-yellow, medium-sized, ovate; flesh tender, juicy, very sweet and rich; skin thin; bunches of medium size, somewhat loose, often badly set. An early Sweetwater Grape. This is the favourite Grape at Constantinople.

Chaptal. Fruit greenish-white, small, round; flesh firm, sweet, watery; bunches long-tapering, rather loose. A very free-growing, mid-season Sweetwater variety, resembling a large form of ROYAL MUSCADINE.

Chasselas de Florence. Fruit pale straw or nearly white, a great many of them assuming a violet hue, and others a cinnamon-brown, small, round; flesh firm, sweet, and pleasant; bunches long, medium-sized, well set. An early Sweetwater Grape.

Chasselas Musqué. Fruit pale greenish-white, changing to amber, small, round; flesh very firm, juicy, and with an extremely rich flavour; skin tender, very liable to crack when approaching maturity—so much so that the bunch becomes a mere skeleton; bunches long-tapering, setting freely. An early Muscat.

Chasselas Rose. Fruit clear rosy-red, small, round; flesh firm, juicy, sweet, and pleasant; bunches long-cylindrical, well set. An early Sweetwater; a pretty variety of the ROYAL MUSCADINE.

Chasselas Vibert. Fruit clear greenish-white, medium, round; flesh firm, tender, sweet, and pleasant; bunches small, compact, well set. A very early Sweetwater Grape.

Ciotat. Fruit clear greenish-white, small, round; flesh firm, sweet, and pleasant; bunches small, compact. Leaves very much cut or laciniated (hence the name PARSLEY-LEAVED GRAPE, sometimes used). An early Sweetwater Grape.

Dr. Hogg. Fruit clear greenish-white, medium, round; flesh firm, very sweet, and with a rich, Muscat aroma; bunches long-tapering, setting well. Mid-season.

Duchess of Buccleuch. Fruit greenish-white, changing to yellow when highly ripened, small, round; flesh tender, juicy, exceedingly rich, and with a strong Muscat flavour; bunches very long, cylindrical, well-set. A mid-season Grape.

Duke of Buccleuch. Fruit greenish-yellow, very large, round; flesh tender, very juicy, sweet, and exceedingly rich; bunches medium, short-ovate. An early Sweetwater Grape, somewhat difficult to cultivate.

Dutch Hamburgh. Fruit deep purplish-black, with dense bloom, very large, round; flesh coarse, and harsh in flavour; bunches medium, short, broadly shouldered, often setting imperfectly. A handsome, mid-season, vinous variety.

Dutch Sweetwater. Fruit clear greenish-white, medium-sized, round; flesh firm, juicy, sweet, and pleasant; bunches short, small, often badly set. An old, early Sweetwater sort, suitable for open-air culture.

Vine—*continued.*

Espiran. Fruit deep purplish-black, medium, round; flesh firm, somewhat harsh; bunches small, tapering, well-set. A good, mid-season, open-air Grape.

Ferdinand de Lesseps. Fruit clear greenish-yellow, translucent, small, ovate; flesh very tender, melting, juicy, and sweet, with a strong aroma of ripe strawberries; bunches small, tapering. An early Muscat Grape.

FIG. 189. BLACK MONUKKA GRAPES.

Bunch, one-third natural size; Berries, full size.

Foster's Seedling. Fruit clear greenish-yellow, medium, oval; flesh tender and melting, sweet and pleasant; bunches medium, shouldered, well set. An early Sweetwater Grape.

Frankenthal. *See* **Black Hamburgh.**

Golden Hamburgh. Fruit greenish yellow, large, round; flesh soft, melting, watery; bunches medium, broadly shouldered. A mid-season Sweetwater Grape.

Vine—*continued.*

Golden Queen. Fruit greenish-yellow, golden when highly ripened, large, long-ovate; flesh soft, squashy, with a faint trace of Muscat; bunches medium, long-tapering, well set. A late Grape.

Vine—*continued.*

Gros Guillaume. Fruit deep black, with fine bloom, medium, round; flesh tender, juicy, with little flavour; bunches very large (sometimes exceeding 20lb.), long, regularly tapering, well set. A late, vinous Grape, generally known as BARBAROSSA.

FIG. 190. GROS COLMAN GRAPES.

Bunch, one-third natural size; Berries, full size.

Grizzly Frontignan Fruit of a dull red or grizzly colour, small, round; flesh firm, sweet, and with a rich Muscat flavour; bunches small, cylindrical, close, and compact. A mid-season Muscat Grape.

Gros Colman. Fruit black, with a thick bloom, large, round; flesh thick, coarse, with a poor, watery flavour; bunches medium, broadly shouldered, well set. An extremely handsome and excellent keeping, late, vinous Grape. See Fig. 190.

Gros Maroc. Fruit nearly jet-black, with a fine bloom, large, truly ovate in shape; flesh firm, juicy, with a brisk, rich flavour; bunches medium, well set. A handsome, late, vinous Grape.

Grove End Sweetwater. Fruit greenish-white, small, oval; flesh tender, melting, with a rich, sweet flavour; bunches small, well set. An early Sweetwater Grape.

Lady Downes' Seedling. Fruit black, large, round; flesh exceedingly firm, juicy, with a somewhat harsh flavour; bunches

Vine—*continued.*

medium, long-tapering, always well set. A good, late-keeping, vinous Grape.

Lombardy. Fruit red or grizzly, medium, round; flesh tender, with a pleasant, sweet flavour; bunches large, broadly shouldered, well set. A mid-season Sweetwater Grape.

FIG. 191. ROYAL MUSCADINE GRAPES.

Bunch, one-third natural size; Berries, full size.

Madeleine Royale. Fruit clear greenish-yellow, medium, oval; flesh tender, juicy, sweet, and pleasant; bunches small, broadly shouldered, well set. An early Sweetwater Grape.

Madresfield Court. Fruit purplish-black, with a fine, grey bloom, large, ovate; flesh firm, yet juicy, sweet, and rich, having a strong Muscat flavour; bunches large, long-tapering, well set. A very handsome and excellent, mid-season Grape.

Miller's Burgundy. Fruit jet-black with a thick bloom, small; flesh dark, juicy, with a pleasant, sweet, watery flavour; bunches quite small, cylindrical, compact and close. Leaves extremely downy on under surface (hence the name MILLER GRAPE, sometimes used). An early Sweetwater Grape.

Mill Hill Hamburgh. Fruit reddish-black, very large; flesh melting, juicy, sweet and rich; skin thin; bunches medium, broadly shouldered. An excellent, early Sweetwater Grape.

Mrs. Pearson. Fruit greenish-white, medium, round; flesh very firm, yet juicy, sweet, and with a rich Muscat flavour; bunches medium, well set. A mid-season Grape.

Mrs. Pince. Fruit purplish-black, coated with bloom, large, ovate; flesh exceedingly firm, very rich and sweet, with a strong Muscat flavour; bunches large, long-tapering, often badly set. A late Grape, which keeps well.

Muscat Champion. Fruit red or grizzly, large, round; flesh firm, yet juicy, rich, and with a strong Muscat flavour; bunches short, broadly shouldered. A mid-season Grape.

Muscat Hamburgh. Fruit purplish-black, large, long-ovate; flesh firm, yet juicy, rich, and with a decided Muscat flavour; bunches medium-sized, loose, broadly shouldered, often badly set. A mid-season Grape.

Muscat of Alexandria. Fruit greenish-yellow, golden when highly ripened, large, long-ovate; flesh firm, juicy, sweet, and rich, with a high Muscat flavour; bunches large, long-tapering. A very handsome and excellent, late Grape.

Vine—*continued.*

Muscat of Hungary. Fruit greenish-yellow, small, short-ovate; flesh firm, sweet, and having a decided Muscat flavour; bunches small, tapering. An early Grape.

Œillade Noire. Fruit deep black, with a fine bloom, large, long-ovate; flesh very tender and juicy, with a pleasant, rich flavour; bunches long, loose, and straggling. A mid-season Sweetwater Grape.

Raisin de Calabre. Fruit white, medium-sized, round; flesh firm, and possessing little flavour; bunches long-tapering. A late, vinous Grape, which keeps well.

Royal Ascot. Fruit purplish-black, large, ovate; flesh very firm, with a strong, piquant, plum-like flavour; bunches small, short, compact, well set. A mid-season vinous Grape.

Royal Muscadine. Fruit greenish-white, small, round; flesh firm, juicy, sweet, and exceedingly pleasant; bunches small, long-tapering, compact, well set. A good, open-air, early Sweetwater Grape, also known as WHITE CHASSELAS. See Fig. 191.

Syrian. Fruit greenish-white, large, ovate; flesh firm, juicy, sweet, and moderately rich. A late, vinous Grape, which keeps well.

Trebbiano. Fruit greenish-white, changing to pale amber when fully ripe, large, ovate; flesh firm, sweetly flavoured, but not rich; bunches very large (one example weighing 26¼lb. has been grown), broadly shouldered, well set. A late, vinous Grape.

Trentham Black. Fruit jet-black, large, ovate; flesh extremely tender and juicy, with a sweet, rich, and very pleasant flavour; bunches large, loose, and straggling, often badly set. An early Sweetwater Grape.

Troveren Frontignan. Fruit, some greenish-yellow, others deep amber tinged with dirty-brown, small, round; flesh firm, crackling, very rich, and highly flavoured; bunches long, tapering, compact, well set. A mid-season Muscat Grape.

FIG. 192. STRAWBERRY GRAPES.

Bunch, one-third natural size; Berries, full size.

West's St. Peter's. Fruit deep purplish-black, medium, round; flesh firm, juicy, sweet, and at all times remarkably fresh; bunches medium-sized, tapering, well set. A late, vinous Grape, which keeps well.

White Chasselas. *See* **Royal Muscadine.**

White Frontignan. Fruit greenish-white, small, round; flesh firm, yet juicy, and very richly flavoured; bunches medium, long-cylindrical, well set. A mid-season Muscat Grape.

Vine—*continued.*

White Nice. Fruit pale greenish-white, medium-sized, round; flesh moderately firm, juicy, sweet, but not rich; bunches very large, somewhat loose and straggling. A late, vinous Grape.

White Tokay. Fruit greenish-white, large, ovate; flesh firm, with a sweet, pleasant flavour when well ripened; bunches large, broadly shouldered, well set. A late, vinous Grape.

Varieties of American Grapes (*Vitis Labrusca*).

These form quite a distinct class from the European Grapes. The American Vine is of a remarkably free and vigorous growth. The berries are small; flesh greenish, having a mucilaginous texture, and a strong musky perfume, with a peculiar "foxy," sweetish flavour; bunches small, produced in great abundance. The leaves are large, thick and leathery, very downy or pubescent on the under surface, and but slightly lobed. The varieties existing in America are extremely numerous, and are better adapted to that country than the European Grapes. The Strawberry Grape has been for many years cultivated in this country and in Germany, and by some persons is greatly esteemed. Those here described have been fruited at Chiswick.

Brighton. Fruit black, small; flesh tender, of a peculiarly sweet flavour; bunches small.

Duchess. Fruit white, medium; flesh brisk, sweet, and pleasant; bunches long, loose.

Eldorado. Fruit deep yellow, small, round, having a strong musky flavour; bunches small.

Golden Pocklington. Fruit clear yellow, round, small, juicy and sweet; bunches medium-sized, compact.

Jefferson. Fruit grizzly-red, large, roundish; flesh melting, of a brisk, sweet, pleasant flavour; bunches small.

Lady. Fruit deep yellow, small, round; flesh melting, musky, rich; bunches small, thinly set.

Moore's Early. Fruit purplish-black, with a fine bloom, small, round; flesh melting, sweet; bunches small, compact.

Strawberry. Fruit purplish-red, small, roundish-ovate; flesh dark, thick or mucilaginous; bunches small, compact, closely set. The ripe fruit emits a strong perfume of ripe strawberries or raspberries. See Fig. 192.

VINE. Any trailing or climbing stem.

VINE, CONDOR. A name given to **Marsdenia Cundurango** (which *see*).

VINE FUNGI. Many species of Fungi have been recorded as living on Vines in Europe and in North America, and there exists almost a special literature upon these parasites. They vary greatly in their destructive powers; and some species have ravaged the vineyards of both Continents. Inquiry into the best methods of contending with the parasites, and of saving the Vines from complete destruction, has thus been powerfully stimulated. In vineries in the British Islands, these pests have not caused so great harm as where the Vines are cultivated on a large scale; yet, even in Britain, the harm done is sufficient to render some notice of them desirable in this work. Of the hundred or more species that have been recorded as growing on Vines, only those that give rise to serious disease are mentioned below.

Vine Mildew is the name given when the leaves and stems become covered with a whitish or greyish coating, either in patches, or over large portions of the plants. Such an appearance is caused by more than one Fungus. The best-known are *Oidium Tuckeri* (which has long been known in Europe, and which was at one time most injurious in the vineyards of France, and also in those of Madeira), and *Peronospora viticola*, the latter a Fungus brought in recent years from America to France, on imported Vines.

Oidium Tuckeri was first described by the well-known botanist, Rev. M. J. Berkeley, from specimens sent to him, in 1847, by Mr. Tucker, a gardener in Ramsgate. It was detected in France in 1848. By 1851 it had spread to all the vineyards in Europe; and in the next year it was observed in Madeira. The Fungus shows itself as a thin, pale layer or coat on the leaves and on the young

Vine Fungi—*continued.*

twigs, and even occurs on the fruits. The diseased parts often become pale, and more or less distorted; the coat becomes thicker; then the spots become brown, and the parts die. An examination with the microscope shows that the surface of the part is covered with the filaments of the Fungus creeping over the epiderm cells of the diseased spots, and that from the side of each filament of the Fungus little suckers are pushed into the epiderm-cells, and absorb food from them for the Fungus. From the other side of the filaments erect branches arise, each formed of a row of cells, of which those at the ends of the branches (conidia) are oval, and break away, to produce the Fungus again when they fall on suitable situations on the Vine leaves or branches. No other mode of reproduction has yet been detected in this Fungus, though it undoubtedly belongs to a more fully-developed form, such as is described under **Mildew** and **Oidium.** Mr. Berkeley has suggested that it may belong to the very common *Erisyphe communis*. Plants suffering from its attacks have a mouldy, disagreeable smell. Another *Oidium* (*O. Balsamii*), with more slender conidia, sometimes occurs on Vines. The Fungus spreads rapidly in a moist, warm atmosphere, and is greatly checked in dry air, and also by very heavy rain, which washes away the spores.

All dead leaves and stems should be removed and burned, to destroy the conidia. Flowers of sulphur form a complete and thorough cure, as they destroy the parasite without injuring the Vines. The sulphur should be dusted on the Vines in early spring, after the stems have begun to push forth, then again when the blossoms have opened, and lastly, when the grapes are beginning to ripen. To prevent any taste of sulphur being perceptible in the ripe fruits, the third dusting must not be too late The green organs to which sulphur is to be applied should be moistened, to make the powder adhere.

Peronospora viticola had been known, from 1834, as a parasite on almost all the Vines of North America; but it was imported into Europe only in 1878, on plants brought to replace the European Vines destroyed by *Phylloxera*. It has now spread widely through France and Algeria. The diseased leaves, about August, show patches of irregular form, and whitish in colour, which soon become brown and dry. The tissues of the leaf are traversed by mycelium, furnished with small haustoria, or suckers, for taking food from the cells; and the white spots bear myriads of erect, fruiting branches of the Fungus (*see* **Peronospora**), each repeatedly divided into three, less often into two, branches. The terminal branches are short, and on the tip of each is an egg-shaped spore. In the spore there grow five or six smaller spores (zoospores), which escape by the bursting of the cell-wall of the spore, and can swim about in dew-drops and moisture of any kind; and at last the zoospores settle down on the leaves, push a slender tube through the epiderm, and give rise to a new plant. The diseased plants produce defective crops of fruit. The grapes also may be attacked. The resting, or sexual, spores of the Fungus have been found in *Vitis æstivalis*; they have a thick, smooth, yellow coat.

Vines grow more healthily in well-watered than in dry soil, and are therefore better able to resist the attacks of the parasite; but a close, moist atmosphere is hurtful, as it encourages the growth of Moulds. The fruiting threads may be destroyed by dusting the plants with a mixture of sulphur and quicklime; but the internal mycelium renders a thorough cure very difficult. Probably the best preventive of the disease is burning dead leaves, stems, prunings, &c.

Several other species of Fungi have been recorded as very destructive in the vineyards of France, Germany, and Italy; but they have not been observed to be hurtful

THE CAUCASIAN SCABIOUS (SCABIOSA CAUCASICA).

Vine Fungi—*continued.*

in England, and therefore require but brief notice here. The roots have been found destroyed by four different Fungi, viz., the *Rhizomorpha* stage of *Agaricus melleus*

FIG. 193. MASS OF AGARICUS MELLEUS ON ROOT OF YOUNG PINE —*a*, *a*, *a*, Mycelium in form known as *Rhizomorpha fragilis*; *b*, Very young Spore-bearers produced on *Rhizomorpha fragilis*; *d*, Older Spore-bearers (*Agaricus melleus*) produced by Mycelium of form known as *Rhizomorpha subcorticalis*.

(Figs. 193 and 194) (*see* **Pinus**, FUNGI), *Dermatophora necatrix*, *Roesleria hypogæa*, and an imperfect mycelium enveloping the lateral roots, and called by Persoon

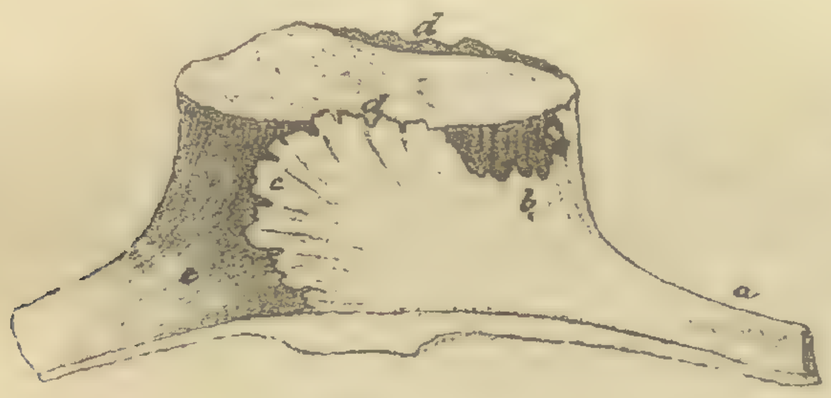


FIG. 194. RHIZOMORPHA FRAGILIS *var.* SUBCORTICALIS. Mycelium of *Agaricus melleus*, in the form it assumes when growing between the Bark and the Wood—*a*, Form intermediate between *fragilis* and *subcorticalis* expanding into the latter on the left; *b*, Portion where growth is slower; *c*, Lobed Margin; *d*, *d*, Margin that has reached cut surface of Stump; *e*, Wood of Stump of Fir-tree.

Fibrillaria xylotricha. These Fungi differ in details of their attacks on the Vine roots; but they all kill the roots, usually beginning with the younger ones; the leaves turn yellow and fall off; and the Vines perish, though some continue to exist in a sickly state for one or two years, if left untouched. Against these root-parasites, the only effectual remedy is to remove and burn the diseased plants, taking the utmost care to remove all fragments of wood, &c., from the soil, to prevent the disease from reaching healthy subjects. No cure is known for plants already attacked by any of these Fungi.

Another disease very fatal in European vineyards assumes the form of dark spots on the young shoots and leaves, on the flower-stalks, and on immature fruits. At first the spots are round, brownish pustules; but they soon extend, and often become confluent. The centre becomes ashy-grey or pinkish-grey, owing to the outpouring of minute, oval conidia through the torn epidermis; but the rest of the spot becomes nearly black. It is surrounded by a narrow, brown border. All the surface tissues of the

Vine Fungi—*continued.*

spot are hardened, and are full of the mycelium of the Fungus; and the conidia or spores are produced on the surface of the mycelium, but below the epidermis, through a tear in which they escape when mature. This Fungus is known as *Glœosporium ampelophagum*. Those parts of the Vines on which it grows are killed or seriously stunted, and even the plants themselves may be killed in bad attacks. When it grows on the flower-stalks, the entire clusters of fruit are destroyed. When it occurs on the grapes, they seldom come to ripeness. The disease has attracted much attention; and it is said that an effectual cure for it has been found in the employment of a solution of sulphate of iron (10 to 15 per cent.) in water, applied in winter, with a pretty large brush, to all parts of the branches. This solution destroys all spores of Fungi, but does not seem to injure the bark of the Vines. As a preventive measure, all prunings and dead leaves should be carefully removed from the surface of the soil, lest they might spread infection among the healthy plants in the following spring.

In Saccardo's great work, the "Sylloge Fungorum," many other Fungi are noted as parasitic on Vines, some of which (*Fusarium Zavianum*, *Pionnotes Biasolettiana*, &c.) are occasionally more or less hurtful. Probably one or other of the remedies indicated above would prove suitable against these parasites, as well as against any others that may in future be met with in vineries in Great Britain.

VINE GALLS. Of these, by far the most to be dreaded are the Galls produced on stems and leaves by *Phylloxera vastatrix* (*see* **Grape or Vine Louse**). The only other Galls on Vines in Europe worth mention are pale, hairy growths (*Erineum Vitis*) caused by Mites (*Phytoptus*), in patches on the lower surface of the leaves, and two produced by Gall-midges. Of these, one is a swelling of the twigs, and is the work of an undetermined species of Midge (*Cecidomyia*); it occurs in the South of France, and in the South of Russia. The other produces swellings, not unlike those of *Phylloxera*, on the leaves. They are about $\frac{1}{10}$in. in diameter, conical on the upper surface, and more rounded below. Several grow in each leaf. This Gall has been found in Austria.

The North American Vine Galls are far more varied in size and form than the European, and several of them attain considerable size. All that will be referred to here are the work of Gall-midges (*Cecidomyia*). The "Filbert Gall" is developed from a bud, and forms a mass 1½in. to 2½in. in diameter, made up of from ten to forty woolly, greenish, juicy Galls, each tenanted by one orange-yellow larva. The "Tomato Gall" consists of an irregular mass of juicy, yellowish-green or red swellings, each occupied by four or five larval chambers, with one orange-yellow larva of *Lasioptera Vitis* in each. The whole mass may reach from 1in. to 4in. across.

The "Apple Gall" is attached to the stem, and is like a hazel-nut in form. It is nearly 1in. in diameter. There are eight or nine furrows down the surface, which correspond to chambers in the interior, in an upper and a lower series. Each is occupied by a bright yellow larva of a *Cecidomyia*. The gall is juicy, and the surface is covered with short, downy hairs. The "Trumpet Gall" rises from the upper (rarely the lower) surface of the leaf. As a rule, many stand on each leaf, two or three often being united at the base. These Galls are about $\frac{1}{3}$in. long by $\frac{1}{20}$in. broad in the widest part; they taper a little towards the base, and the other end is sharp. Their colour varies from bright red to green.

Remedy. None of the above Galls have yet been recorded from England. Should any of them be introduced with European or American Vines, they should be removed from the plants while still young and soft: no further remedy is needed.

VINEGAR PLANT. When fluids containing sugar in solution are allowed to stand exposed to the atmosphere, their composition undergoes considerable chemical changes in a short time. The microscopic spores of various kinds of Fungi fall into them, germinate, and feed upon the sugar, which they break up into simpler combinations. Carbonic Acid gas is given off; and a quantity of Alcohol is formed at the expense of the sugar. If the fluid is allowed to stand undisturbed for some time, the Alcohol also is attacked, and is changed, by the addition of Oxygen to it, into Vinegar. These changes are accompanied by the formation, on the surface of the fluid, of a tough, slimy layer, usually covering the whole surface, but not extending to a great depth. On examining a portion of the mass, it will be found to form layer on layer, separable from one another, the lower layers hanging in a flocculent web into the fluid. The microscope shows that the mass is made up chiefly of the translucent filaments of a Fungus, consisting of short, rod-like cells, end to end, imbedded in a gelatinous substance. Some of the cells are swollen at intervals. All are very minute; but they are capable of growing and reproducing themselves, if broken off the filaments. Intermixed with these are various other forms of cells, belonging to other kinds of Fungi that grow in the fluid, since many kinds of spores usually fall into it. In fact, it is impossible to obtain an unmixed culture of such small Fungi, except by the exercise of the utmost care. Trustworthy observations and experiments prove that the production of Vinegar from Alcohol goes on only when this mass of Fungus is present (except when artificially effected by chemical agencies); hence the mass is usually known as the Vinegar Plant. Various species of Fungi have been detected in it; but there is reason to believe that the species which effects the formation of Vinegar is a member of the great group of *Bacteria*. It has received various names; those most commonly used are *Mycoderma Aceti*, Pasteur, and *Bacterium Aceti*, Kuetz. It forms the greater part of the Vinegar Plant, and its cells vary greatly in shape, being globular and very minute (*Micrococcus*), or like short rods (*Bacterium* form), or longer rods (*Bacillus* form), or filaments, as described above (*Leptothrix* form), all united by the gelatinous slime into what is often called a *Zooglœa*. Intermixed with the *Mycoderma*, or at times forming separate patches, are the filaments and groups of cells of *Saccharomyces Mycoderma*, a Fungus nearly allied to the Yeast of beer. By some botanists this has been regarded as the active agent in the production of Vinegar. *Mycoderma Aceti* has the power of absorbing Oxygen from the atmosphere, and of effecting its union with the Alcohol to form the Vinegar; and such cells of this Fungus as are in immediate contact with the air can even cause the breaking up of the Vinegar into Carbonic Acid and water, by continuing the process of oxidation. In France, *M. Aceti* is employed in the commercial manufacture of Vinegar. Shavings of wood, covered with the Fungus, are put into solutions containing sugary substances, or Alcohol, such as beer, cider, sap of fruits, wines, brandy, &c. A temperature of from 85deg. to 95deg. Fahr. is found to give the most favourable results, both in rapidity and in amount of production of Vinegar. *Mycoderma Aceti* does not thrive in very acid wines or other solutions, and it generally appears in them only after they have been rendered less acid by the growth in them for some time of *Saccharomyces Mycoderma*. If a Vinegar Plant is allowed to remain on the fluid after it has exhausted the sugars available for its nourishment, the surface becomes covered, after a time, with blue, green, or yellow Moulds (*Penicillium glaucum*, &c.), or other minute Fungi. These were at one time believed to be developed as a further stage of the Vinegar plant itself; but they must be regarded as growing at the expense of the latter, when it is weakened by its food being exhausted.

VINEGAR-TREE. A common name for *Rhus glabra* and *R. typhina*.

VINE, GLORY. A common name for **Clianthus** (which *see*).

VINE, GRANADILLA. *See* **Passiflora quadrangularis.**

VINE, GRAPE-FLOWER. *See* **Wistaria.**

VINE, ICE. A name applied to **Cissampelos Pareira** (which *see*).

VINE, KANGAROO. *See* **Vitis antarctica.**

VINE LOUSE. *See* **Grape or Vine Louse.**

VINE MAPLE. A name given to **Acer circinatum** (which *see*).

VINE, MILK. A name sometimes used for **Periploca græca** (which *see*).

VINE MOTHS. The larvæ of several species of Moths feed on the leaves, twigs, or young fruit of Vines. Some of them are Hawk Moths (*see* **Sphingidæ**), the Elephant Hawk Moths (*Deilephila Elpenor* and *D. Porcellus*) being the commonest. Others belong to the Night Moths (*see* **Noctua**). Of the latter may be specially noted the White-line Dart Moth (*Agrotis Tritici*), the Large Yellow Under-wing Moth (*Triphœna pronuba*), and the Gothic Moth (*Nœnia typica*). All three feed on many plants, the two first-named being almost omnivorous; and all of them destroy the shoots and leaves of Vines, though the larvæ differ a good deal in their habits. Those of *Agrotis Tritici* and of *Triphœna pronuba* hide in the soil by day, but at night they gnaw the young shoots near the ground; and it is thus difficult to detect them. The methods recommended against **Surface Caterpillars** may be employed to lessen their numbers. The larvæ of *Nœnia typica* feed, in autumn, on the upper surface of the leaves of most kinds of fruit-trees, including Vines. The young larvæ live in companies, packed side by side, almost motionless, but eating away the surface membrane of the leaves steadily forward, and leaving brown, dead patches behind them. When about a fortnight old, they drop to the earth, and thereafter feed on low plants, till the cold weather of winter makes them go under shelter till spring, when they resume their life on the low herbage. They are dull brown, with a darker line down the back and one on each side, and a series of oblique, short, white lines along the lower part of each side. It is easy to remove the companies of larvæ by hand-picking, if they are doing injury to the Vines.

Certain of the smaller Moths belonging to the **Tortricina** (which *see*) are extremely destructive in the vineyards of France and Germany; but they are seldom the causes of much harm in British vineries, though they occur sparingly in England. *Œnectra Pilleriana* (called also *Tortrix Pilleriana*) has been the subject of very exhaustive investigation, by Audouin and other French naturalists, under the name "Pyrale de la Vigne." Its larvæ live in rolled Vine leaves, and are very hurtful on the Continent; but the insect is too rare in England to call for a longer notice here. An allied insect (*Eupœcilia ambiguella*) is almost equally hurtful abroad, as the larvæ feed on the flower-buds and on the young grapes, and envelop the clusters in webs, which prevent the growth of the fruit, and promote its early decay. This insect, also, is too rare in England to be dangerous. The fore wings reach a little over ½in. in span; they are ochreous, with a greyish streak along the basal half of the front margin, and a broad, slanting, dark grey bar about the middle of the wing; the head and thorax are ochreous. *Lobesia reliquana* (also called *Tortrix vitisana* and *Grapholitha botrana*) has very similar habits to the last-named species, devouring the flower-buds, and spinning the clusters of young fruit up in webs. In bad attacks, as much as

Vine Moths—*continued.*

half the crop has been lost in this way. This insect has been extremely troublesome in Austria. It is not rare in the South of England, though it has done little mischief in this country as yet. It is a little less than ½in. in span of fore wings, which are chestnut-red, marbled with pale buff, and with two dark brown, white-edged, triangular spots on the hinder margin of each. The change into pupæ occurs in the soil below the Vines. The larvæ may be detected by their webs, and should be removed, either by hand-picking the ravaged clusters, or by shaking or jarring them above a sheet, tarred tray, or any other contrivance for capturing the larvæ shaken off the plants. In the "Gardeners' Chronicle" for Sept. 23, 1882, *Œnectra Pilleriana* and *Lobesia reliquana* are noticed and figured by Professor Westwood; and, in the same newspaper, a month later, still another insect-foe is added: this is *Ditula angustiorana* (also called *Tortrix angustiorana*). The last-named is nearly related to *Lobesia reliquana*, but is larger. The fore wings measure from ½in. to ⅝in. in span, being ochreous in the males, and reddish-brown in the females; in both sexes, the wings show a darker patch at the base, a chestnut-brown patch slanting from the middle of the wing to the hinder angle, and darker spots irregularly scattered over the outer half of the wing, the most conspicuous of these being a triangular spot on the front border. The larvæ have been found living on most fruit-trees, as well as on Privet, Hawthorn, and other shrubs; and within the past few years they have been discovered in ripened grapes in English vineries. They also feed on the Vine leaves, but not in such numbers as to seriously injure the plants in this way. Though abundant in many parts of England, *Ditula angustiorana* usually feeds on a variety of food-plants in preference to Vines.

Among the *Tineina* (*see* **Moths**) there are few species that are dangerous to Vines. Of one small Moth (*Antispila Pfeifferella*) the larvæ, which usually feed on the leaves of Dogwood, sometimes mine in the Vine leaves, and, when about to become pupæ, form flat cases composed of two pieces cut out of the leaves, and attach them to the leaves or branches. The pupæ lie protected in the cases till the emergence of the Moths. The fore-wings of the latter reach only about ⅓in. in span; they are brown, with a coppery or golden gloss, and near the middle they are crossed by two narrow, yellow bands, the outer of which is broken in the middle. The injury done to the leaves by this species is seldom noticeable, though the Moth is not rare in England.

Treatment. This varies with the habits of the larvæ that are doing the harm. Hand-picking is a sufficient remedy against the larvæ of Hawk Moths, and the groups of larvæ of *Nænia typica*. It is the only efficient method against Leaf-miners, such as *Antispila*; and it must also be resorted to against the larvæ of *Tortricina*, which live inside the young or ripe fruits, or in the clusters, inclosed in webs. The larvæ, and the leaves or grapes in which they live, should be destroyed, not merely thrown on the ground. Hand-picking is also of use where the eggs (*e.g.*, of *Œnectra Pilleriana*) are placed in clusters on the leaves. Those larvæ that conceal themselves in the soil by day, and emerge from their concealment by night to feed on the shoots and leaves, or that gnaw the bark of the stems and roots, should be combated as recommended under **Surface Caterpillars**. Such larvæ as live in rolled leaves may be collected in sheets or trays laid below the branches, which should be shaken or jarred, to cause the larvæ to drop from their concealment. The larvæ of some of the *Tortricina* that injure the Vines and fruits, pass the winter under the loose bark on the stems, and emerge, when the weather becomes milder, to devour the buds, young leaves, and flowers. The pupæ of some are protected during winter in similar retreats. It is, therefore, desirable to remove

Vine Moths—*continued.*

all loose bark, and this can be done in winter by means of a brush of stiff fibres, *e.g.*, of piassaba. All dead leaves and rubbish should also be removed from the surface of the soil, and either consigned to the compost-heap or burned. In the continental vineyards, the Moths are trapped by fires, or by shallow dishes of water, into which they fly. A solution of potassic sulphate (1 per cent.), sprayed over the flower-buds about the time the first brood of Moths is on the wing, and over the young fruits when the second brood is ready for egg-laying, has been found to materially lessen the injury to the crop.

VINE, MOUNTAIN. *See* **Viola tricolor lutea.**

VINE, PEPPER. A common name for **Ampelopsis bipinnata** (which *see*).

VINE, PIPE. A common name for **Aristolochia Sipho** (which *see*).

VINE, POISON. A name frequently applied to **Rhus Toxicodendron** (which *see*).

VINE, POTATO. A common name for **Ipomæa pandurata** (which *see*).

VINERY. *See* **Vine.**

VINE SCALE INSECTS. Though occurring in France and in Germany, these insects are not native in Britain. The one most frequently found on Vines is *Lecanium Vitis*, also called *Coccus Vitis*. The female is covered with an oval, convex scale, which is a little narrowed in front; the colour is reddish-brown, with black dots; the shield is bordered by the white, cottony secretion in which the red eggs are embedded. The male insects are very small; they are brick-red, with black thorax, brown antennæ, and two transparent wings, each with a thickened and red front border; the body ends in two long bristles. This insect lives on the old stems of Vines, preferring such as are sickly; and it occurs either singly or in groups.

Mytilaspis Vitis is another Vine Scale, met with in Germany. It is very like the **Apple Mussel Scale** (which *see*), and has usually been mistaken for it; but the two species differ in certain minute characteristics. The larvæ live on the young twigs near the buds; and the spots on which they are placed become brown or blackish. The females live on the twigs of the second year's growth.

Remedies are detailed under **Scale Insects**. The branches and stems must be well cleansed from the Scales, by means of a stiff brush and strong lye of wood-ashes, or solution of kerosene or carbolic acid. Good manure should afterwards be applied to the roots.

VINE, SILK. *See* **Periploca græca.**

VINE, SILVER. A popular name for **Scindapsus argyrea** (which *see*).

VINE SLUG. The name popularly given, in North America, to the larva of the Grape-vine Sawfly (*Selandria Vitis*), which occasionally almost strips the leaves off the Vines in vineyards in the United States. The perfect insect has four wings, which are smoky-brown, but semi-transparent, with brown veins. The thorax is red, the rest of the body black, and the fore legs and lower side of the other legs pale yellow or whitish. The female is ¼in. long, the male rather shorter. The females lay their eggs in small clusters on the lower surface of the leaves at the tips of the shoots, in the spring and early summer. The larvæ feed side by side, in groups of fifteen to twenty. Beginning at the edge of a leaf, they eat inwards, with great regularity of rank, till they reach the leafstalk; then they eat the next lower leaf, and so on down the shoot. The full-fed larvæ are a little more than ½in. long, and are thickest a little behind the head, thence tapering

Vine Slug—*continued.*

backwards. They are pale yellow, with darker or greenish backs. Each ring bears two cross rows of minute, black dots The head and the tip of the last segment are black. At the last moult they become entirely yellow, and, crawling down to the soil, burrow into it, and form small, oval, earthen cocoons. In a fortnight, the autumn brood of Sawflies emerges, and from their eggs a new brood of larvæ is hatched.

Remedies. These insects have not been found in Europe, but may be brought from America with Vines. If introduced, the infested Vines should be sprinkled with Hellebore powder (½oz. in 1 gal. of water) or Paris Green (half-a-teaspoonful in 1 gal. of water).

VINE, WATER. A common name for **Phytocrene** (which *see*).

VINE WEEVILS. Several species of the great group of Weevils are hurtful to the young twigs and leaves of Vines. They are hence sometimes distinguished as Vine Weevils; but this name is rather misleading, as they are all hurtful also to many other cultivated plants. They belong to the genera *Otiorhynchus* and *Rhynchites.* The species of most frequent occurrence on Vines are: *O. Ligustici*, black, with greyish scales; *O. picipes* (Clay-coloured Vine Weevil), of a brown or earthy colour, sometimes approaching clay-yellow; *O. sulcatus*, black or dark brown, with tufts of grey hairs on the wing-cases; and *R. betuleti*, shining blue or green, and hairless. A full account of these insects, and of the appropriate remedies against them, will be found under **Otiorhynchus** and **Rhynchites.**

VINE, WONGA-WONGA. A common name for **Tecoma australis** (which *see*).

VINEYARD CANE. A common name for **Arundo Donax** (which *see*).

VIOLA (the old Latin name used by Virgil, &c., akin to the Greek *Ion*). Heartsease; Pansy; Violet. Including *Erpetion.* ORD. *Violarieæ.* A large genus (about 100 species) of mostly hardy, perennial herbs, rarely suffrutescent; nearly sixty are found in North temperate regions (seven in Britain), about thirty in South America, two in South or East Africa, and eight in Australia or New Zealand. Flowers often cleistogamous (except in the group of which *V. tricolor* may be taken as a representative)—the large-petaled ones appear first, and often yield no seed; the small-petaled, or apetalous ones, appear late, and are prolific—sepals sub-equal, produced at the base; petals spreading, the lower ones often larger, spurred or saccate at base; anthers connate, the connectives of the two lower ones often spurred at the base; peduncles axillary, one or rarely two-flowered. Leaves alternate; stipules persistent, often leaf-like. Of the large number of species introduced, the best-known are here described; they are mostly dwarf plants—seldom exceeding 6in. in height—adapted for planting on rockwork, in flower borders, and, if sufficiently plentiful, in wild gardens, &c. Some of the species are very dwarf and compact in habit: these should, therefore, particularly if scarce, only be planted in select places where they can receive proper attention. The species may generally be propagated by seeds, by runners, or by divisions.

The numerous varieties of bedding Violas and Pansies are popular and well-known plants, valuable for spring and summer bedding, for mixed borders, and for many other situations; they flower in the greatest profusion, and over a lengthened period, if the weather is not too hot and dry for their well-being. Seedlings may easily be raised, but varieties must be perpetuated by cuttings or by divisions. The treatment recommended under **Pansy** is also applicable to the bedding Violas.

Viola—*continued.*

Varieties. The following is a selection of floriferous varieties. Perhaps many others are equally as good as those here named.

ALPHA, bluish-purple. BLUE BELL, violet, shaded blue; very floriferous. CANARY, yellow; fine. CRITERION, violet; free. DICKSON'S GOLDEN GEM, golden-yellow; very free. GRIEVEI, yellow. HOLYROOD, indigo-blue; fine. LILACINA, rich lilac. PILRIG PARK, pure white; large and good. ROYAL VISIT, violet self. SNOWDROP, waxy-white. THE TORY, plum-colour; one of the best.

SWEET VIOLETS (*Viola odorata*). Of these there are several varieties cultivated in gardens, and few flowers are more generally liked, particularly through the winter and spring months. To insure a supply at these periods, a special system of culture must be practised, and frames must be available. Stock plants may be divided—those similarly treated the previous year are preferable—into as many young single crowns as they admit, in April or May, and all the old crowns should be thrown away, unless required for propagating only. The selected crowns should be planted in good ground, and in an open situation, about 9in. apart, allowing 12in. between the rows. A position where Violets generally succeed in summer is a north or north-west border, but much depends on local circumstances and the nature of the soil, whether light or heavy; if light, the north border should be selected, as it would be cooler than elsewhere, and the plants would be less liable to the attacks of Red Spider, which is their greatest enemy. Attention to cleaning, lightly hoeing the surface soil, and watering, if necessary, are important details of summer management. Mulching with spent mushroom beds, or other short manure, is of great advantage if the summer be hot; it keeps the soil cool, and tends to prevent undue evaporation. Syringing, or sprinkling with water from a can, in the evenings, after dry days, is recommended, and most of the young runners which will appear should be cut away when small. Some cultivators save about three runners on each plant, and peg them down; these root and flower well during winter with the parent, and make excellent stock plants for the next year. Towards the middle or end of September, the frames, or pits, should be prepared, and the best specimens lifted and planted in them just close enough to occupy all the space without overcrowding. The frames should have a south aspect, and should be partially filled with well-prepared stable litter and leaves. About 6in. of soil is necessary for planting in, and this should be brought up as near the glass as the foliage will allow, so that full exposure to light and sunshine in winter will be assured. Give a thorough watering, and keep the frames rather close for about a week after planting; plenty of air may then be admitted, on all favourable opportunities, all through the winter, the sashes being entirely removed during sunshine and when there is no frost, and also in very mild weather. Foggy weather is injurious to Violets in frames: it causes damping amongst the leaves, and prevents proper development of the flowers. Marie Louise is one of the best of all Violets for frame culture when treated as described; Comte Brazza and the old Neapolitan are also excellent. The Neapolitan does not generally grow so freely as Marie Louise, and is later in flowering. These three double-flowered varieties are general favourites for frames.

Varieties. There are several varieties, both double and single-flowered; the following selection comprises most of the best:

ARGENTÆFLORA, purplish-white, very fragrant. COMTE BRAZZA, white, double, sweet-scented; extra good. CZAR, blue, single, large, and produced in great profusion. MARIE LOUISE, lavender-blue and white, very large flowers, sweet-scented; very floriferous, extra fine. NEAPOLITAN, pale lavender; an old and well-known double variety, very sweet-scented. ODORATA ALBA, white, single; dwarf and distinct. QUEEN OF VIOLETS, white, flushed with pink, double. RUSSIAN, blue, single, large, very free; an old variety. VICTORIA REGINA, blue, double, large, fragrant. WHITE CZAR, a white form of Czar.

Viola—*continued.*

V. altaica (Altaian). *fl.* yellow, large; sepals acute, denticulate; spur scarcely as long as the appendages of the sepals; stigma urceolate. March to June. *l.* oval; stipules cuneate, with acute teeth. Stem short. Root creeping, slender, hard. Altaian Mountains, 1805. (B. M. 1776; B. R. 54; R. G. 1071.)

V. arenaria (sand-loving.) *fl.* pale blue, on short, axillary branches from a compact rosette; sepals acute; petals broad; spur short. May and June. *l.* orbicular-ovate, obtuse. Europe (Britain), &c. Plant small, tufted, pubescent, 2in. to 6in. in diameter. (Sy. En. B. 174 *bis.*)

V. biflora (two-flowered). *fl.* yellow, the lip streaked with black, small; sepals linear; petals smooth; spur very short; stigma bifid. April and May. *l.* reniform, serrated, smooth; stipules ovate. Stem erect, about two-flowered. Roots creeping. Europe, Siberia, &c., 1752. (B. M. 2089; F. D. 46.)

V. blanda (charming). *fl.* white, small, faintly sweet-scented; petals mostly beardless, the lateral ones veined with lilac; spur short. Early spring. *l.* round-cordate or reniform, minutely pubescent. Rootstock creeping. North America, 1802.

V. calcarata (spurred). *fl.* blue or white; sepals oblong, glandularly denticulate; spur awl-shaped, longer than the calyx. March to July. *l.* spathulate-roundish or elongated, crenate; stipules palmatifid or trifid. Stems short, simple, tufted. Root fibrous, diffuse. Austria, 1752. A very variable species.

V. c. albiflora (white-flowered). *fl.* white, large. *l.*, stipules cut, scarcely ciliated. Stem short. (R. G. 1028.)

V. c. Halleri (Haller's). *fl.* blue, large. Otherwise like *V. c. albiflora.* (R. G. 1028.)

V. canadensis (Canadian). *fl.*, petals white or whitish inside, the upper ones mostly tinged with violet beneath, the lateral ones bearded; spur very short; stigma beakless. May to August. *l.* cordate, pointed, serrated; stipules ovate-lanceolate, entire. *h.* 1ft. to 2ft. North America, 1783. (S. B. F. G. ser. ii. 62.)

V. canina (canine). Dog Violet. *fl.* blue, lilac, grey, or white, ½in. to 1½in. in diameter; sepals narrow, acuminate; spur obtuse; style clavate, hooked. April to August. *l.* long-petiolate, crenate-serrate, narrow ovate-cordate. Europe (Britain), &c. Very variable in size, habit, and colour of flower. (F. D. 2646.)

V. c. lactea (milky). *fl.* grey; petals narrow, the spur very short. *l.* ovate-lanceolate, rounded or cuneate at base. Rootstock short, without runners. Plant very slender. (Sy. En. B. 176, under name of *V. lactea.*)

V. c. persicæfolia (Peach-leaved). *fl.* pale lilac or white; spur very short. *l.* oblong-lanceolate, truncate at base; upper ones narrower. Rootstock long, with runners.

V. capillaris (capillary). *fl.* pale blue; lateral petals densely bearded; spur short, obtuse, greenish; pedicels axillary, solitary, slender, four to six times as long as the leaves. May to August. *l.* petiolate, ovate or ovate-oblong, ⅛in. to ⅜in. long, obtuse at base, cuneate-decurrent, slightly acute at apex, the margins remotely glandular-serrated. Stems many, tufted, decumbent, leafy. Chili. (F. d. S. 983.)

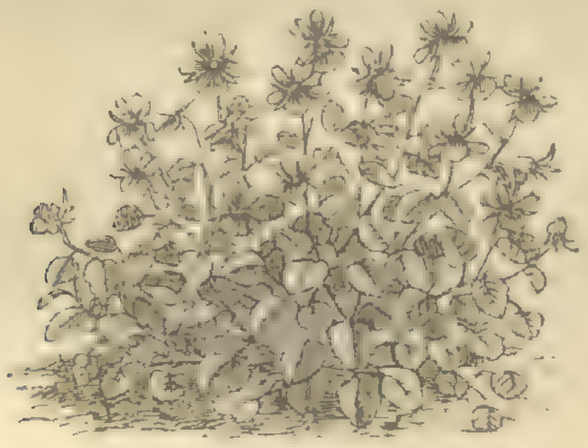


FIG. 195. VIOLA CORNUTA.

V. cornuta (horned).* *fl.* pale blue; sepals awl-shaped; spur awl-shaped, elongated and abrupt at the base. May to July. *l.* cordate-ovate, crenate, ciliated; stipules obliquely cordate, toothed, ciliated. Stems ascending, diffuse. Root fibrous. Switzerland and Pyrenees, 1776. Plant tufted. See Figs. 195 and 196. (B. M. 791.) B. H. 1871, 9, represents one of the numerous large-flowered garden forms, called PERFECTION.

V. cucullata (hooded).* *fl.* deep or pale violet-blue or purple, sometimes nearly white or variegated with white; lateral, and often the lower, petals bearded; spur short and thick; stigma slightly beaked or beakless; scapes 3in. to 10in. high. Early spring. *l.* long-petiolate, erect, cordate, with a broad sinus, varying to reniform and dilated-triangular, smooth or more or less pubescent, the sides at the base rolled inwards when young, obtusely serrated. Rootstocks thickly toothed. North America, 1762. A very variable species. See Fig. 197. (B. M. 1795; S. B. F. G. ser. ii. 298.) There is a variegated form in cultivation.

Viola—*continued.*

V. c. palmata (palmate-leaved). *l.* variously three to seven-cleft or parted, or the earlier ones entire on the same plant. (B. M. 535, under name of *V. palmata.*)

V. dentata (toothed). A synonym of *V. sagittata.*

V. eriocarpa (woolly-fruited). A form of *V. pubescens.*

V. flabellata (fan-like). A synonym of *V. pedata.*

V. flabellifolia (fan-leaved). A synonym of *V. pedata.*

FIG. 196. FLOWERS OF VIOLA CORNUTA.

V. hederacea (Ivy-like).* *fl.* blue, rarely white, usually small, but sometimes ⅜in. broad; petals glabrous, or the lateral ones slightly pubescent inside; spur reduced to a slight concavity. July. *l.* reniform, orbicular, or spathulate, usually less than ½in., but in very luxuriant specimens 1in. to 1½in., broad, entire or toothed. Australia, 1823. Plant tufted, half-hardy. (H. E. F. iii. 225; L. B. C. 1133.) SYNS. *Erpetion hederaceum, E. reniforme* (S. B. F. G. 170).

V. hirta (hairy). *fl.* inodorous or faintly scented; spur long and hooked; bracts lower on the peduncle; anther spurs lanceolate. April to June. *l.* narrower and more triangular, with deeper crenatures and a shallower sinus; hairs of petiole more spreading. Otherwise like *V. odorata.* Europe (Britain), &c. (Sy. En. B. 172.)

V. lactea (milky). A form of *V. canina.*

V. lanceolata (lance-leaved). *fl.* white, small; petals beardless, the lower ones veined with lilac. Early spring. *l.* lanceolate, erect, blunt, tapering into a long-margined petiole, almost entire. Rootstock creeping. North America, 1759. (L. B. C. 211; S. B. F. G. 174.)

V. montana (mountain-loving). *fl.* white, at length bluish; spur conical, truncate, straight, greenish, shorter than the sepals; stigma papillose, slightly reflexed. May to July. *l.*, lower ones cordate, upper ones ovate, acute; petioles margined; stipules oblong, toothed or incised. Stem simple, erect. *h.* 1ft. Europe and Siberia, 1683. (B. M. 1595.)

V. m. Ruppii (Ruppius'). *l.* cordate or lanceolate. Stems procumbent. (A. F. P. iii. 26 and L. B. C. 686, under name of *V. Ruppii.*)

V. Munbyana (Munby's).* *fl.* violet or yellow, large, one to three from the lower axils; spur straight, nearly twice exceeding the calyx; peduncle erect, long-exceeding the leaves. Spring. *l.* ovate-cordate, obtuse, obtusely crenate, glabrous, or the margins slightly ciliated. Stems procumbent. Algiers. A pretty species. *lutea* is a yellow-flowered form.

V. odorata (odorous).* Sweet Violet. *fl.* blue, white, or red-purple, fragrant; lateral petals with or without a tuft of hairs; spur nearly straight, short, obtuse; anther spurs linear-oblong; style hooked; stigma oblique; bracts about the middle of the peduncle. March to May. *l.* deeply cordate at base, the sinus closed; stipules glandular; petioles deflexed-hairy. Rootstock short, scarred, with very long runners. Europe (Britain), &c. (B. M. Pl. 25; Sy. En. B. 171.)

V. o. alba (white). *fl.* white.

V. o. pallida-plena (pale double). Neapolitan Violet. *fl.* pale lavender, double, very sweet-scented.

V. o. permixta (confused). *fl.* pale, scentless. Runners not rooting.

V. o. sepincola (hedge-loving). *fl.* dark, scentless. Runners rooting. More hairy than the type.

Viola—*continued.*

V. palmata (palmate). A variety of *V. cucullata.*

V. palustris (marsh-loving). *fl.* white or lilac, ½in. in diameter, scentless; sepals obtuse; lateral petals almost glabrous; spur short, obtuse; stigma obliquely truncate. April to July. *l.* cordate-reniform, slightly crenate, enlarging after flowering; stipules glandular. Rootstock white, scaly, subterranean, creeping; runners short, leafless. Europe (Britain), &c. (Sy. En. B. 170.)

V. pedata (pedate-leaved).* *fl.* usually bright blue, sometimes pale or even white, very large; petals all glabrous, the spur very short; stigma large and thick, margined, obliquely truncate. May and June. *l.* pedately about seven-parted, firm; leaflets linear-lanceolate, entire or incisely three-toothed at the summit, sometimes very narrow and laciniate; stipules ciliated. Rhizome thick. North America, 1759. See Fig. 198. (A. B. R. 153; B. M. 89; F. M. 350; L. B. C. 536; S. B. F. G. 69). SYNS. *V. flabellifolia* (L. B. C. 777), *V. flabellata* (S. B. F. G. ser. ii. 247).

V. p. atropurpurea (dark purple). *fl.* dark purple; pistil pubescent. *l.*, segments cuneate, incised. (F. d. S. 1361; R. G. 1110, f. a.)

V. p. bicolor (two-coloured).* A very handsome variety, with the two upper petals deep violet, and, as it were, velvety, like a Pansy.

V. pedunculata (pedunculate).* *fl.* deep yellow, large; petals broadly obovate, the two upper ones with conspicuous claws, the lateral ones bearded at the base; spur very short; peduncles twice or thrice as long as the leaves. Spring. *l.* rhombic-ovate, scarcely 1in. long, rather thick, coarsely and obtusely toothed,

Viola—*continued.*

abruptly narrowed at base. California, 1856. Half-hardy. (B. M. 5004; F. d. S. 2426.)

V. præmorsa (bitten). *fl.* yellow, rather large; lower petal veined with brown, emarginate; spur very short; peduncles mostly shorter than the leaves. Spring. *l.* ovate-lanceolate, repandly denticulate or nearly entire; stipules entire. Stems erect, short. North America, 1828. Plant usually densely hirsute. (B. R. 1254.)

V. pubescens (downy). *fl.* yellow, the lower petals veined with purple; spur extremely short. Spring and early summer. *l.* very broadly cordate, toothed, somewhat pointed; stipules large, ovate or ovate-lanceolate. Stems simple, erect, naked below, two to four-leaved above. *h.* 6in. to 12in. North America, 1772 Plant softly pubescent. (L. B. C. 1249; S. B. F. G. 223.)

V. p. eriocarpa (woolly-fruited). A stout and more pubescent variety, 1ft. to 2ft. high, with woolly pods. (B. R. 390; S. B. F. G. 102, under name of *V. eriocarpa.*)

V. pyrolæfolia (Pyrola-leaved). *fl.* yellow; sepals acuminate; petals densely bearded within; spur short, obtuse; stamens emarginate at apex. January. *l.* ovate, sometimes loosely cordate; stipules fringed at apex. Patagonia, 1851. (F. d. S. 665.)

V. Riviniana (Rivinus').* A form of *V. sylvatica.*

V. rothomagensis (Rouen).* *fl.* bright blue, the side petals and lip striped with black; spur tubular, obtuse, shorter than the sepals; bracts near the flower, lanceolate, with a tooth on each

FIG. 197. LEAVES AND FLOWERS OF VIOLA CUCULLATA.

Viola—*continued.*

side. April to August. *l.* ovate, the lower ones somewhat cordate, crenate, fringed; stipules pinnatifid, rather lyrate. Stems zigzag, branched, diffuse. Root rather fusiform. France and Belgium, 1781. Plant hispid or pilose. (B. M. 1498.)

V. rotundifolia (round-leaved). *fl.* yellow; lateral petals bearded and marked with brown lines; spur very short. Early spring. *l.* round-ovate, cordate, slightly crenate, 1in. broad at flowering time, increasing in the summer to 3in. or 4in., then lying flat on the ground, shining above. Rootstock creeping. North America, 1800.

V. Ruppii (Ruppius'). A variety of *V. montana.*

V. sagittata (arrow-leaved). *fl.* purple-blue, rather large; lateral, or occasionally all, petals bearded; spur short and thick; stigma beaked. Spring and early summer. *l.* on small and margined, or the later ones on naked, petioles, varying from oblong-cordate to hastate, sagittate, oblong-lanceolate, or ovate, denticulate, sometimes cut-toothed near the base. North America, 1775. Plant smoothish or hairy. (L. B. C. 1471.) SYN. *V. dentata* (L. B. C. 1485).

V. s. emarginata (emarginate). *fl.*, petals emarginate or bidentate. *l.* almost triangular, lacerate-toothed near the base.

V. Selkirkii (Selkirk's). *fl.* pale violet; spur very large, almost as long as the petals, thickened at the end. Spring and early summer. *l.* round-cordate, crenate, ½in. to 1½in. long, minutely hairy above, and having a deep, narrow sinus; petioles (and scapes) 1in. to 2in. long. Rootstock filiform, fibrous-rooted. North America, 1873. A small and delicate plant. (R. G. 752.) SYN. *V. umbrosa.*

V. striata (striated). *fl.* cream-coloured or white; lateral petals bearded, the lower ones striped with purplish lines; spur rather thick, much shorter than the petals; stigma beaked. April to October. *l.* cordate, finely serrated, often acute; stipules large, oblong-lanceolate, strongly fringed-toothed. Stems angular, ascending, 6in. to 10in. high. North America, 1772.

V. suavis (sweet). Russian Violet. *fl.* pale blue, white at the base, sweet-scented; sepals obtuse; four upper petals narrowest, the lower one emarginate, the two lateral ones with a hairy line; stigma hooked, naked. March to May. *l.* reniform-cordate, crenate, pubescent. Stolons long, creeping and rooting. Tauria, 1820. (S. B. F. G. ser. ii. 126.)

FIG. 198. VIOLA PEDATA.

V. sylvatica (sylvan). Wood Violet. *fl.* bluish-purple or lilac, on axillary branches from a radical rosette; base of sepals much produced in fruit; spur short, broad, compressed, furrowed, usually pale. March to July. *l.* broadly ovate-cordate; stipules lanceolate, acute, fimbriated or toothed. Rootstock short. Europe (Britain). Plant glabrous.

V. s. Reichenbachiana (Reichenbach's). *fl.* paler, smaller, and earlier than in the species; spur longer; sepals scarcely produced in fruit. (Sy. En. B. 174.)

V. s. Riviniana (Rivinus'). *fl.* bluish-purple or lilac, scentless, ⅝in. to 1in. across; petals obovate-oblong, the lowest much broader than the others; peduncles long, with two small bracts. Late summer. *l.*, lower ones as broad as (or broader than) long; upper ones a little narrower than long. (Sy. En. B. 173, under name of *V. Riviniana.*)

V. tricolor (three-coloured).* Heartease; Pansy. *fl.* ¼in. to 1¼in. in diameter; sepals with large auricles; petals purple, whitish, or golden-yellow, sometimes particoloured; stigma capitate, excavated. May to September. *l.* long-petiolate, ovate-oblong or lanceolate, 1in. to 1½in. long, lyrate, coarsely and remotely crenate-serrate; stipules ⅛in. to ½in. broad. Stem 4in. to 18in. long, branched, erect or ascending, angular, flexuous.

FIG. 199. VIOLA TRICOLOR.

Rootstock none. Europe (Britain), &c. See Fig. 199. (Sy. En. B. 178.) In addition to the two most popular names above mentioned, the following are applied to this species: Call-me-to-you, Fancy, Flamy, Garden Gate, Herb Trinity, Jump-up-and-kiss-me, Kiss-me, Kiss-me-at-the-garden-gate, Live-in-idleness, Love-in-idleness, Pink-of-my-John, Three-faces-under-a-hood, Tickle-my-fancy.

V. t. arvensis (field-loving). *fl.* white or yellowish; petals usually shorter than the sepals, or wanting. Stem elongated, branched. (Sy. En. B. 179.)

V. t. Curtisii (Curtis'). *fl.* blue, purple, or yellow; petals spreading, rather longer than the sepals. Rootstock branched, stoloniferous, tufted. (Sy. En. B. 180.)

V. t. lutea (yellow). Mountain Vine. *fl.* blue, purple, or yellow; petals spreading, much longer than the sepals. Rootstock branched. Branches slender, with short stems and underground runners. (Sy. En. B. 181.)

V. umbrosa (shade-loving). A synonym of *V. Selkirkii.*

V. variegata (variegated-leaved). *fl.* pale violet; spur cylindrical, straight, as long as the sepals. May and June. *l.* cordate-ovate or roundish, violaceous below, obscurely green above, white at the veins, and rather hispid (in fruit-bearing plants large and almost glabrous); stipules lanceolate, denticulated. Root rather hard, sub-divided. Dahuria, 1817. (R. G. 1852, 20.)

VIOLACEOUS. Violet-coloured.

VIOLARIEÆ. A natural order of broadly-dispersed herbs or shrubs, the former plentiful in temperate regions, the latter more numerous in the tropics. Flowers hermaphrodite, rarely polygamous, axillary, solitary or in cymes, racemes, or panicles; sepals five, imbricated, rarely persistent; petals five, hypogynous or slightly perigynous, unequal or sub-equal, imbricated, often twisted; perfect stamens five; anthers erect; pedicels usually bibracteolate. Fruit a capsule, often opening elastically by as many seed-bearing valves as there are placentas; or an indehiscent berry. Leaves alternate or rarely opposite, simple, entire or rarely laciniate; stipules leafy or small, in the shrubby species generally deciduous. The order embraces twenty-one genera, and about 240 species, many of which are well known in gardens. Examples: *Hymenanthera, Sauvagesia, Viola.*

VIOLET. *See* **Viola.**

VIOLET, ADDER'S. A name applied to **Goodyera pubescens** (which *see*).

VIOLET, BOG. A name given to the species of *Pinguicula.*

VIOLET, CANATHIAN. A common name for **Gentiana Pneumonanthe** (which *see*).

VIOLET, CAPE. A name frequently applied to **Ionidium capense** (which *see*).

VIOLET, CORN. *See* **Specularia hybrida.**

VIOLET, DAME'S. *See* **Hesperis matronalis.**

VIOLET, DOG. *See* **Viola canina.**

VIOLET, DOG'S-TOOTH. *See* **Erythronium dens-canis.**

VIOLET, FALSE. A common name for *Dalibarda repens* (now included under *Rubus* as *R. Dalibarda*).

VIOLET, FOREIGN. *See* **Schweiggera.**

VIOLET, FRINGED. *See* **Thysanotus.**

VIOLET FUNGI. Violets are liable to the attacks of several species of Fungi, which grow on the stems and leaves, and on the sepals and petals of the flowers.

Urocystis Violæ causes the stems and leaves of *Viola odorata*, and of other Violets, to become greatly thickened and distorted. After a time, the epiderm on the swellings is torn here and there, and displays the dark masses of spores. Each spore consists of a large central cell (which, on germinating, forms a slender mycelium tube), and an outer layer or coat of smaller cells.

Puccinia Violæ is of very frequent occurrence on the leaves and petioles of many Violets, including the common wild species and most of the cultivated ones. It appears, in early summer, in the form of Cluster Cups (*Æcidium Violæ*), and is then easily recognisable by the small, yellow cups thickly dotted over reddish-orange, swollen patches. Each cup has a nearly white margin of little teeth, formed by the torn edges of the burst outer coat (peridium), which incloses a multitude of minute, orange-yellow spores. Afterwards, the cups are replaced by small, brown, powdery masses, irregularly scattered, or in circles, composed of rounded or oval, prickly, brown, one-celled, stalked spores, and of the true *Puccinia* spores, each on a rather long stalk, brown, and made up of two cells end to end.

Another *Puccinia* that grows on Violets is *P. ægra*. This species greatly weakens or kills *V. cornuta*, and has also been found on *V. lutea*. Its *Æcidium* has been named *Æ. depauperans*, from its weakening (or depauperating) effect on the host-plants. It may be distinguished from *Æ. Violæ* by the cups being scattered, and not grouped on thickened spots. The two also differ in microscopic peculiarities of their spores.

Puccinia Fergussoni grows on the leaf-stalks and leaves of *V. palustris*, producing thickenings of the tissues, overgrown by the brown, two-celled spores. This Fungus is not known to have more than this single form of spore.

Not unfrequently, the leaves of Violets show discoloured spots, which, on examination with the microscope, are found to be due to the presence of species of *Ramularia* (*R. agrestis* and *R. lactea*), or of *Cercospora* (*C. Violæ*), &c. These are minute Moulds, and bear elongated, multicellular, transparent or brown spores, on the tips of slender stalks. Or such spots may be dotted over with the small, dark perithecia of *Læstadia Violæ*, one of the *Sphæriaceæ*, which has eight oval, unicellular spores in each ascus.

Of all the Fungi that occur on Violets, the most destructive are *Puccinia ægra*, *P. Violæ*, and *Urocystis Violæ*; though the others also may cause considerable disfigurement. These all grow within the tissues of the plants, the only parts pushed to the surface being the organs of reproduction. It is therefore of little use to attempt to cure diseased plants, the interior of which must be full of the Fungi; and it is advisable to remove and burn the plants, to prevent the spread of disease to previously healthy specimens.

VIOLET, MERCURY'S. An old name for *Campanula Medium*.

VIOLET, SPURLESS. *See* **Erpetion hederacea.**

VIOLET, TONGUE. A common name for **Schweiggeria** (which *see*).

VIOLET, WATER. *See* **Hottonia palustris.**

VIORNA. *See* **Clematis Viorna.**

VIPER GOURD. *See* **Trichosanthes anguina.**

VIPER'S BUGLOSS. *See* **Echium.**

VIPER'S GRASS. *See* **Scorzonera hispanica.**

VIRAYA. A synonym of **Waitzia** (which *see*).

VIREYA. Included under *Rhododendron*.

VIRGATE. Twiggy; producing many weak branches; wand-shaped; slender, straight, and erect.

VIRGILIA (named in honour of the poet Virgil). ORD. *Leguminosæ*. A monotypic genus. The species is a greenhouse tree, requiring culture similar to that recommended for **Viminaria.**

V. capensis (Cape). *fl.* rosy-purple, ½in. long; calyx silky, widely campanulate, shortly two-lipped; standard orbicular, strongly reflexed; racemes lateral, longer than the leaves, many-flowered. July. *l.* six to ten-jugate, exstipulate; leaflets linear-oblong, mucronate, nearly 1in. long, with slightly revolute margins, the young ones silky on both sides, the old ones glabrous and glossy above. South Africa, 1767. (B. M. 1590.) SYN. *Podalyria capensis* (A. B. R. 347).

V. lutea (yellow). A synonym of *Cladrastis tinctoria*.

VIRGINIAN COWSLIP. *See* **Mertensia virginica.**

VIRGINIAN CREEPER. *See* **Ampelopsis quinquefolia.**

VIRGINIAN DATE PALM. *See* **Diospyros virginiana.**

VIRGINIAN SILK. A common name for **Periploca græca** (which *see*).

VIRGINIAN STOCK. *See* **Malcolmia maritima.**

VIRGIN'S BOWER. *See* **Clematis.**

VIRGULARIA A synonym of **Gerardia** (which *see*).

VIRIDESCENT. Greenish; turning green.

VIROLA. Included under *Myristica*.

VISCARIA. Included under **Lychnis** (which *see*).

VISCID, VISCOUS. Clammy; sticky from a tenacious coating or secretion.

VISCUM (the old Latin name used by Virgil and Pliny, akin to the Greek *Ixos*). Mistletoe. ORD. *Loranthaceæ*. A genus comprising nearly thirty species of stove, greenhouse, or hardy shrubs, parasitic on trees, inhabiting the temperate and warmer regions of the globe. Flowers dicœcious or moncœcious, at the axils or nodes, or at the tips of the branches, three to five in a fascicle or rarely solitary, the fascicles sessile or rarely on short peduncles; perianth tube in the male flowers very short and solid, in the females adnate with the ovary, the limb three or four-parted; bracts often small. Berry one-seeded, naked or crowned with the perianth. Leaves sometimes flat and rather thick, sometimes reduced to minute teeth or scales. *V. album*, the common Mistletoe, has been associated with many superstitions from the most ancient times, and has been highly extolled for its medicinal virtues. It is, however, now excluded from the Pharmacopœias. "The origin of the modern custom connected with Mistletoe is not very clear. Like many other customs, its original significance is only guessed at. If known, perhaps the innocent merriment now associated

Viscum—*continued.*

with the plant would be exchanged for a feeling of stern disapproval, and the Mistletoe would be banished from our homes. . . . Mistletoe may be made to grow on the Apple and other trees, by cutting a notch in the bark on the under-surface of a branch, and carefully inserting the seed therein. Two precautions are especially needed—one is to place the seed in such a position that the embryo shall be directed towards the trunk of the tree, and the other is to avoid crushing the seed. The Apple is the tree on which the Mistletoe grows most abundantly. The orchards in Herefordshire are greatly infested with this parasite, which, however, has a value of its own, for it appears that upwards of one hundred tons of Mistletoe are annually forwarded to London and other large towns from that county alone, for Christmas decorations. Some sorts of Apples are preferred to others for its growth, and, singularly enough, it is rarely, if ever, found on the Pear-tree. Next in frequency to the Apple, the Mistletoe prefers the Poplars, though it is not found on the Lombardy Poplar. Hawthorns, Limes, Maples, and the Mountain Ash, are all favourite habitats for the plant. It has been found on the Cedar of Lebanon and on the Larch, but rarely upon the Oak. Dr. Bull, in a paper in the 'Journal of Botany' (ii. 73), only mentions seven authentic instances of the growth of Mistletoe on the Oak in this country" (Dr. Masters). The ripe fruits may be crushed on young branches of Apple or Thorn trees, and the viscid pulp soon hardens and affords protection to the seed, as well as sufficient resistance to allow it, when germinating, to pierce the bark. To prevent birds from disturbing the seeds after being placed in position, it is necessary to cover with thin canvas, or some such material.

V. album (white). Common Mistletoe. *fl.* green, ternate, inconspicuous. March to May. *fr.* white, nearly ½in. in diameter, ovoid or globose, viscid. *l.* opposite or in whorls of three, 1in. to 3in. long, obovate-lanceolate, obtuse, five to seven-nerved. Branches terete, dichotomous, knotted. *h.* 1ft. to 4ft. Europe (Britain), &c. Shrub yellowish-green, glabrous. (F. D. x. 1657; Sy. En. B. 635.)

VISIANIA. A synonym of **Ligustrum** (which *see*).

VISMIA (named in honour of M. de Visme, a merchant of Lisbon). SYN. *Acrossanthes.* ORD. *Hypericineæ.* A genus embracing upwards of twenty species of stove trees or shrubs, mostly tropical American, four being found in Western tropical Africa. Flowers yellow or whitish; sepals five; petals five, often villous above; stamens in five groups; cymes terminal, sometimes few-flowered, sometimes paniculately many-flowered. Berry indehiscent. Leaves entire, often ample and tomentose or canescent beneath, gland-dotted, rarely highly glabrous. The undermentioned species, which are all that call for mention in this work, thrive in a compost of loam and peat, and may be increased by cuttings, inserted in sand, under a bell glass, in heat. All are shrubs.

V. glabra (smooth). *fl.*, calyx ovate-oblong, obtuse, glabrous; panicle loose. July. *l.* elliptic-lanceolate, glabrous, on short, compressed petioles. Branchlets compressed. *h.* 6ft. Peru, 1824.

Vismia—*continued.*

V. guianensis (Guiana). American Gamboge or Gutta-Gum Tree. *fl.* corymbose; calyx villous. August. *l.* ovate-lanceolate, acuminate, dilated at base, glabrous above, rufescent beneath; petioles short. Stems quadrangular. *h.* 8ft. Guiana, 1824.

V. guineënsis (Guinea). *fl.*, calyx ovate-lanceolate; corolla glabrous; panicle spreading. May. *l.* ovate-lanceolate, acute, softly dotted beneath; petioles slender. Stems terete; branches divaricate. *h.* 6ft. Guinea, 1823.

VISNEA (called after a Lisbon merchant named Visne, who was interested in botany). ORD. *Ternströmiaceæ.* A monotypic genus. The species is a greenhouse, evergreen tree, with the habit and inflorescence of **Eurya** (which *see* for culture).

FIG. 200. FLOWERING BRANCHLET OF VISNEA MOCANERA.

V. Mocanera (so named by Linnæus on account of the fruit being supposed by some authors to have been the Mocan, which was made into a kind of syrup, and largely employed by the aboriginal inhabitants of the Canary Islands). *fl.* rather small, sub-sessile; sepals much imbricated; petals connate at base; stamens numerous. March. *fr.* baccate, indehiscent. *l.* smooth, alternate, elliptic or lanceolate. Canary Islands and Madeira, 1815. See Fig. 200. (R. H. 1882, p. 212.)

VITELLARIA. A synonym of **Lucuma** (which *see*).

VITEX (the old Latin name used by Pliny for this or some similar shrub). SYNS. *Limia, Nephrandra, Psilogyne, Wallrothia* (of Roth). ORD. *Verbenaceæ*. A genus comprising about sixty species of stove, greenhouse, or hardy trees or shrubs, broadly dispersed over the warmer regions of the globe, a few extending to temperate Asia and South Europe. Flowers white, blue, violet, or yellowish, in variously-disposed cymes; calyx five-toothed or cleft, or rarely three-cleft; corolla tube straight or slightly incurved, usually short, the limb oblique, spreading, sub-bilabiate, five-cleft, the lower lobe largest; stamens four, didynamous; bracts small or rarely longer than the calyx. Leaves opposite, often digitately compound, rarely one-foliolate or simple; leaflets three to seven, petiolulate, entire or toothed. A selection of the best-known species is given below. *V. Agnus-castus* succeeds in any common, tolerably dry soil, and may be increased by cuttings, inserted in similar soil, under a glass, in autumn. A compost of loam and peat is most suitable for the stove and greenhouse species, which may be multiplied by cuttings, inserted in sand, under a glass, those of the stove kinds in heat.

FIG. 201. FLOWER OF VITEX AGNUS-CASTUS.

V. Agnus-castus (classical name).* Chaste-tree; Hemp-tree; Monk's Pepper-tree; Tree of Chastity. *fl.* pale lilac; cymes sub-sessile, in glomerate whorls; panicles terminal or axillary. August. *l.* long-petiolate, mostly five-foliolate; leaflets lanceolate, acuminate, attenuated at base, entire or sometimes cut-serrated, whitish beneath. *h.* 6ft. South Europe, 1670. Shrub, hardy in the South of England. See Fig. 201. (S. F. G. 609.)

V. bicolor (two-coloured). A synonym of *V. Negundo*.

V. bignonioides (Bignonia-like). *fl.* blue; cymes somewhat head-like, on peduncles 2in. to 3in. long. June. *l.* petiolate, five-foliolate; leaflets oblong, acuminate-cuspidate, narrowed at base, entire, 2in. or more long, glabrous, sub-equal; common petiole 1½in. or more long. *h.* 8ft. Venezuela, 1826. Stove tree.

V. Doniana (Don's). Black Plum. *fl.* disposed in a moderate-sized panicle. *l.* five-foliolate, obovate. Sierra Leone. A large, stove tree.

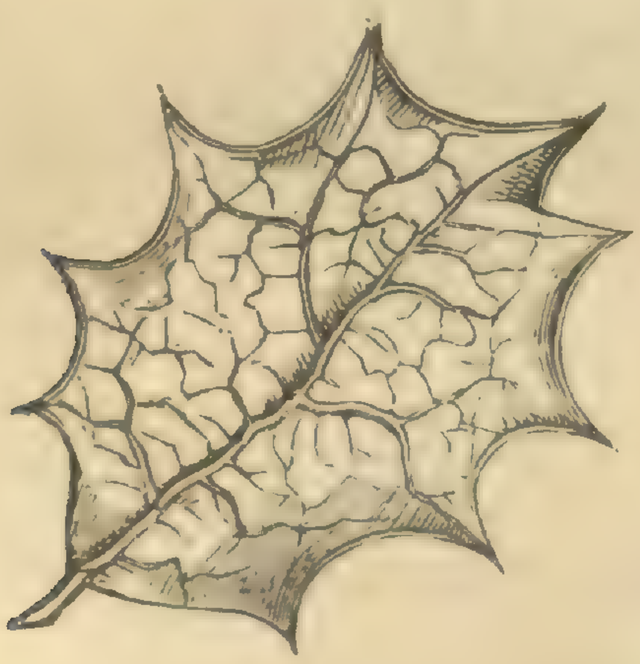


FIG. 202. LEAF OF VITEX ILICIFOLIA.

V. ilicifolia (Holly-leaved). *fl.* in axillary cymes, longer than the leaves, on long peduncles, trichotomously branched, rusty-pubescent. Summer. *l.* simple, very shortly petiolate, broadly oval, sub-acute at apex, acute or cordate-emarginate at base, very slenderly reticulate-veined; margins sinuate-toothed, the teeth spiny. West Indies. Stove shrub. See Fig. 202.

Vitex—*continued.*

V. Lindeni (Linden's).* *fl.* pale lilac, streaked with red inside the tube, shortly pedicellate or sessile, in three to six-flowered, pedunculate, axillary cymes; corolla tube thrice exceeding the calyx, the limb flat, two-lipped, the upper lip of two smaller, the lower of three larger, rounded lobes. May. *l.* digitately three to five-foliolate, on slender petioles; leaflets sessile, elliptic or elliptic-obovate, abruptly acuminate, pale green, glabrous. Branches spreading; branchlets and inflorescence hoary-pubescent. Columbia, 1876. Stove shrub or small tree. (B. M. 6230.)

V. Negundo (Negundo). *fl.* purple; corolla ¼in. to ⅓in. long; panicles terminal, closely white-tomentose. June. *l.* three to five-foliolate; leaflets lanceolate, entire or crenate, glabrate above, white-tomentose beneath. *h.* 4ft. India, 1812. Stove shrub or small tree, closely allied to *V. trifolia*. SYN. *V. bicolor*.

V. N. incisa (cut-leaved).* *l.*, leaflets crenate-serrate or sub-pinnatifid. India, China, &c. Greenhouse. (B. M. 364, under name of *V. Negundo*.)

V. trifolia (three-leafleted). Indian Wild Pepper. *fl.* varying from lavender to blue; corolla tomentose, ⅓in. to ½in. long; panicles 1in. to 4in. long, oblong, white-tomentose, often leafy at base. July. *l.* simple and trifoliolate; leaflets sessile, obovate or obovate-oblong, entire, 1in. to 3in. long, sub-obtuse, glabrate above, clothed beneath with matted, scarcely stellate hairs. *h.* 4ft. India, Polynesia, &c., 1739. Stove shrub or small tree. (B. M. 2187.)

V. t. variegata (variegated). *fl.* violet-purple. *l.* opposite, with white margins. South Sea Islands, 1876. A slender, greenhouse shrub, with downy branches.

VITICASTRUM. A synonym of **Sphenodesma** (which *see*).

VITICELLA. A common name for **Clematis Viticella** (which *see*).

VITICULOSE. Sarmentaceous; furnished with vine-like twigs or suckers (viticulæ).

VITIS (the old Latin name used by Virgil, &c., perhaps from *vieo*, to bind; in allusion to its clinging character). Vine. *Ampelopsis* and *Cissus* are here included by Bentham and Hooker, but for garden purposes these are kept distinct in this work. ORD. *Ampelideæ*. A vast genus (about 230 species) of stove, greenhouse, or hardy, tendrilled, sarmentose, often tall-climbing shrubs, mostly found in tropical and sub-tropical regions, but rare in tropical America. Flowers small, umbellate, cymose, paniculate, racemose or spicate, ebracteate, sometimes polygamous; calyx four or five-toothed or lobed; petals and stamens four or five; peduncles leaf-opposed or very rarely axillary, often near the tips of the branchlets. Berries ovoid or globose, one or two-celled; cells one or two-seeded. Leaves simple or compound, very rarely bipinnate; leaflets entire, serrated or dentate, sometimes pellucid-dotted. The Grape Vine (*V. vinifera*) has been cultivated since the days of Noah, and is supposed to have been introduced into this country by the Romans. Its principal products are: Wine, vinegar, brandy, raisins, and currants. The hardy species of *Vitis* are admirably grow up trees, or over strong-growing shrubs; also for trailing over massive rockwork, or along on the ground. They usually grow strong in good, loamy soil, and, consequently, require considerable space. The foliage is very ornamental at all times, particularly when changing colour in autumn. Vines requiring indoor treatment may be planted out, or grown in large pots, and trained to rafters, or a trellis. Propagation is easily effected by cuttings, inserted in pots, and placed in a close propagating-frame. Ripened wood, of the previous year's growth, will, in most, if not all, cases, root in a similar way to the Grape Vine; and, as the plants are gross feeders, they do best in a rich, loamy soil, with some manure intermixed. *See also* **Vine.**

V. æstivalis (summer).* American Summer Grape. *fl.* with a Mignonette-like scent. May and June. *fr.* black, with a bloom, small, pleasant, ripe in October; fertile panicles long and slender, compound. *l.* simple, rounded and cordate, often variously lobed, woolly beneath, smoothish when old. *h.* 20ft North America, 1656. Hardy climber.

Vitis—*continued.*

V. albo-nitens (shining white). *l.* oval-oblong, acuminate, cordiform at the base, shining on the upper side and suffused with a brilliant, silvery-white tone of colour. Brazil, 1871. Stove climber. SYN. *Cissus albo-nitens.*

V. amazonica (Amazon). *l.* large, oval, acuminate, smooth, glaucous, red beneath, with the veins silvery above; young ones almost linear, their veins very strongly marked. Amazon, 1866. A pretty, stove climber. SYN. *Cissus amazonica.*

V. antarctica (Antarctic). Kangaroo Vine. *fl.* tomentose-pubescent; cymes dense, broadly corymbose, shorter than the petioles. July. *fr.* globular. *l.* simple, petiolate, ovate or oblong, mostly acuminate and slightly cordate, 3in. to 4in. by 1½in. to 2in., entire, sinuate or irregularly toothed, rather firm or almost coriaceous. Australia, 1790. Tall, greenhouse climber. SYN. *Cissus antarctica* (B. M. 2488).

V. Bainesii (Baines'). *fl.* on glandular pedicels, cymose; peduncles terminal, as long as the stem. July. *l.* ternate, rather shortly petiolate (the lower ones sometimes simple); leaflets ovate or oblong, unequally serrated, penniveined; stipules twin. Trunk turnip-like, 1½ft. in circumference. *h.* 4½ft. Western tropical Africa, 1864. A dwarf, glaucous, succulent, stove tree. (B. M. 5472.)

FIG. 203. BRANCHLET OF VITIS DAVIDIANA.

V. capriolata (tendrilled). *fl.* on pedicels ¼in. to ⅓in. long; cymes axillary or terminating in short, lateral branches, pedunculate; peduncles conspicuously bracteate. *fr.* black, globose, two to four-seeded, the size of a currant. *l.* five-foliolate; petioles 1½in. to 2½in. long; leaflets 1½in. to 3in. by ½in. to 1¼in., lanceolate or narrowly ovate or sub-ovate, acute or sub-acuminate, bristly-serrate in the notches. Temperate Himalayas. Hardy, with the protection of a wall, in the South of England.

V. chontalensis (Chontales). *fl.* scarlet, disposed in compound cymes. December. *l.* trifoliolate, of a lovely green; lateral leaflets obliquely ovate, acuminate, terminal one elliptic, all toothed. Branchlets angular. Chontales Mountains, Nicaragua, 1869. An elegant, glabrous, stove climber. SYN. *Cissus chontalensis.*

V. cirrhosa (tendrilled). *fl.* minute, in dense cymes. *l.* digitately three to seven-foliolate; leaflets succulent, sub-sessile, obovate, remotely dentate-serrate, quite glabrous in cultivation. Stems long, weak, brittle, fleshy, furnished with long, bifid tendrils. South Africa, 1866. A straggling, glabrescent or pilose, greenhouse shrub.

Vitis—*continued.*

V. cordifolia (cordate-leaved). Chicken, Frost, or Winter Grape. *fl.* very sweet-scented. May and June. *fr.* blue or black, with a bloom, small, very acerb, ripening after frosts; panicles compound, long and loose. *l.* thin, not shining, cordate, acuminate, sharply and coarsely toothed, obscurely three-lobed, smooth or nearly so, and bright green on both sides. *h.* 12ft. North America, 1806. Hardy climber. *V. riparia* (B. M. 2429) is a mere form of this, with broader, cut-lobed leaves.

V. Davidiana (David's). *fl.* small. *fr.* violet, not edible. *l.* palmately lobed, the margins of the broad lobes toothed; petioles red, long. China. A vigorous-growing, hardy climber, speedily covering a large surface. See Fig. 203. SYNS. *Cissus Davidiana* (R. H. 1868, p. 29, f. 2), *C. platanifolia, C. rubricaulis.*

V. Endresii (Endres'). *l.* cordate, deep velvety-green, the veins being of a deep purplish-brown. Costa Rica, 1875. A strong-growing, stove climber.

V. gongylodes (rounded). A synonym of *V. pterophora.*

V. heterophylla humulifolia (variable-leaved Hop-leaved). Turquoise-berried Vine. *fl.* minute, sub-umbellate; cymes on slender peduncles, sparingly divided. *fr.* of a fine, pale, china-blue colour, dotted with black, globular. *l.* on slender, red petioles, three to five-lobed, with a broad sinus at base; lobes acutely serrated, dark green and rugose above, pale beneath, with pubescent veins. Stems 2ft. to 5ft. long. North China and Japan, 1868. Hardy climber. (B. M. 5682.)

V. hypoglauca (glaucous beneath). *fl.* yellow, minute, but pretty, freely produced in axillary cymes. *l.* digitately five-foliolate, oval or oblong, light green above, beautifully glaucous beneath when young. Tendrils wanting. Australia. Greenhouse or conservatory shrub.

V. japonica (Japanese). *fl.* green, disposed in panicles. *l.* compound; leaflets five, petiolate, the four lower ones bijugate, glabrous, roundish-oval, denticulate, the odd or terminal one larger, oval-elliptic, acuminate. Japan, 1875. A half-hardy climber, of vigorous, quick-growing habit. SYN. *Cissus japonica.* A variety called *marmorata*, with broad, yellow blotches on the leaves, has sported from this.

V. javalensis (Javali Mine). *fl.* bright scarlet, in compound cymes. *l.* much handsomer than those of *V. chontalensis*, simple, cordate, acuminate, mucronate-toothed, above green and beautifully velvety-pubescent, the midrib and veins purplish, below glabrous and purplish. Chontales Mountains, Nicaragua, 1869. A highly ornamental plant. SYN. *Cissus javalensis.*

FIG. 204. FRUITING BRANCHLET OF VITIS LABRUSCA.

V. Labrusca (classical name).* American Plum Grape; Isabella Grape; Northern Fox Grape. *fl.* Mignonette-scented. June.

Vitis—*continued.*

fr. dark purple or amber-coloured, large, with a tough, musky pulp, ripe in September or October; fertile panicles compact. *l.* simple, rounded and cordate, variably lobed, rusty-woolly beneath. Branchlets (and young leaves) very woolly. *h.* 12ft. North America, 1656. Hardy climber. See Figs. 204 and 205. (R. G. 765, 1.) SYN. *V. Thunbergii* (R. G. 424).

FIG. 205. FRUITS OF VITIS LABRUSCA.

V. lanata (woolly).* *fl.* green, small, forming a thyrsoid, paniculate cyme. May. *fr.* purple, four-seeded, round, the size of a large pea. *l.* cordate-ovate, shortly acuminate, usually 3in. to 6in. by 1¾in. to .3in., sometimes larger, usually softly pubescent, but occasionally felted beneath or nearly glabrous. Himalayas, 1824. Hardy. The leaves of this species assume a beautiful scarlet colour in autumn.

V. Lindeni (Linden's). *l.* bright green, freely mottled with white between the veins. Branches terete, tendrilled. United States of Colombia, 1871. A smooth, shrubby, greenhouse climber. SYN. *Cissus Lindeni* (I. H. ser. iii. 2).

V. macropus (gouty-stemmed). *fl.* four-parted, disposed in a rather broad corymb. April and May. *fr.* reddish-violet, the size of a pea. *l.* (at first plicate and white-tomentose), long-petiolate, the lowest one on the branch tri-, the rest five-foliolate; leaflets ovate-elliptic or obovate, shortly stalked, toothed, cobwebby-pubescent. Trunk forming a large bulb, bi-tribrachiate, covered with smooth, green bark. *h.* 1ft. to 2½ft. South Benguela, 1864. A dwarf, stove tree, more curious than beautiful. (B. M. 5479.)

V. planicaulis (flat-stemmed). *fl.* four-parted; cymes sub-corymbose, with divaricating branches. May and June. *fr.* red (?), the size of a cherry. *l.* on petioles 4in. to 7in. long; leaflets 5in. to 8in. long, on stalks ¾in. to 1½in. long, oblong-lanceolate, slightly acuminate, obtusely serrated. India, &c. A vast, stove, glabrous climber. (B. M. 5685.)

V. pterophora (wing-bearing).* *fl.*, cymes pedunculate, with thick, divaricate branchlets. Autumn. *l.* long petiolate, trifoliolate; leaflets ample, sessile, rugose-undulated, trapezoid- or rhomboid-obovate, acuminate, serrated, with impressed, reticulated nerves, the terminal one somewhat three-lobed, the lateral ones oblique or dimidiate-ovate, with the lower margin produced in a lobe; stipules fuscous-purple, ample. Each branch bears at its extremity (after ceasing to grow for the season) an elongated, fleshy tuber, 5in. to 6in. long, which finally drops off, and, on reaching the ground, under favourable circumstances, forms a new plant. Brazil. A unique, tall-climbing, villous, stove plant (B. M. 6803.) SYN. *V. gongylodes* (G. C. n. s., xix., p. 53).

V. quadrangularis (four-angled). *fl.* green, in small, shortly-stalked, glabrous cymes. Summer. *fr.*, berry globose, red, the size of a pea, very acrid. *l.*, when present, small, broadly-cordate or reniform. Stems glabrous, four-winged, very thick and fleshy, greatly contracted at the nodes, generally leafless. India, Java, &c. A curious and interesting, quick-growing, warm house climber.

V. riparia (river-bank). A form of *V. cordifolia.*

V. striata (striped). *fl.* greenish, inconspicuous, in cymes opposite the leaves. *fr.* reddish, the size of small peas. *l.* rather thick, dark green, digitate; leaflets sessile, oblanceolate, serrated, cuneate at base. Stems and tendrils glabrous. South Brazil and Uruguay, 1881. A beautiful, hardy, evergreen climber.

V. Thunbergii (Thunberg's). A synonym of *V. Labrusca.*

V. vinifera (wine-bearing). Common Grape Vine. *fl.* in loose or crowded, ovate or cylindrical racemes. June and July. *fr.* purple varying to white and green, watery or fleshy, sweet musky, or sour. *l.* lobed, sinuately toothed, naked or downy. South of the Caspian. Hardy climber. (B. M. Pl. 66; S. F. G. 242.) *See also* **Vine.**

V. v. amurensis (Amur). *l.* entire or three to five-lobed; young leaves woolly on both sides. (R. G. 339.)

V. vulpina (Fox Grape). Bullace; Muscadine. *fl.* densely disposed in small panicles. May. *fr.* purplish, without bloom, musky, ½in. to ¾in. in diameter, with a thick and tough skin, ripening early in autumn. *l.* shining on both sides, small, rounded, cordate at base, coarsely broad and blunt-toothed, seldom lobed. Branchlets minutely warty. North America. Hardy climber.

VITTARIA (from *vitta*, a riband; alluding to the narrow fronds). Including *Tæniopsis.* ORD. *Filices.* A genus comprising about thirteen species of tropical, stove Ferns. Fronds grass-like, sub-coriaceous, with free veins. Sori in continuous marginal or slightly intra-marginal lines. The species known in gardens are here described. For general culture, *see* **Ferns.**

V. elongata (lengthened). *fronds* 6in. to 18in. long, ⅛in. to ¼in. broad, the point acute or rather blunt, the lower part very gradually narrowed to the base; midrib faint or distinct; veins simple, immersed. *sori* quite sunk in a marginal groove, with two nearly equal lips opening outwards. Himalayas, Australia, &c. SYNS. *V. ensiformis, V. zosteræfolia.*

V. ensiformis (sword-shaped). A synonym of *V. elongata.*

V. lineata (lined). Florida Ribbon Fern. *fronds* 6in. to 18in. long, ⅛in. to ⅜in. broad, gradually narrowed downwards to a stout, compressed stem which passes gradually into the frond, the edges often reflexed; midrib distinct, raised; veins immersed, parallel. *sori* in a broad, slightly intra-marginal line in a slight furrow, the edge of the frond at first wrapped over it. West Indies, Guinea Coast, &c., 1793. SYN. *Tæniopsis lineata.*

V. scolopendrina (Scolopendrium-like). *fronds* 1ft. to 1½ft. long, ½in. to ¾in. broad, the point acute, the edge entire, the lower part very gradually narrowed to the base; midrib blackish, thick, grooved in front below; veins oblique, fine, parallel. *sori* in broad, continuous, sub-marginal lines, the firm, unaltered edge of the frond at first wrapped over it. New Guinea, Ceylon, &c. SYN. *Tæniopsis scolopendrina.*

V. zosteræfolia (Zostera-fronded). A synonym of *V. elongata.*

VITTATE. Longitudinally striped.

VITTMANNIA. A synonym of **Willemetia** (which *see*).

VIVIANIA (named in honour of Domenico Viviani, 1772-1840, a professor and botanist of Genoa, &c.) SYN. *Macræa.* ORD. *Geraniaceæ.* A genus embracing about eight species of stove or greenhouse herbs, sub-shrubs, or small shrubs, inhabiting extra-tropical or sub-tropical South America. Flowers regular, sub-fasciculate or corymbose-paniculate in the upper axils; calyx of five, rarely four, valvate lobes; petals five, rarely four, hypogynous, twisted; stamens ten, rarely eight, free, all bearing anthers. Leaves opposite, entire or often crenately or deeply toothed, usually snowy-tomentose beneath. It is doubtful whether the under-mentioned species are now in cultivation. They are, however, pretty, greenhouse shrubs, and thrive in a compost of loam, peat, and sand. Propagation may be effected by young cuttings, inserted in sand, under a glass.

V. grandifolia (large-leaved). *fl.* white or red; peduncles shorter than the leaves. July. *l.* grey and glandular beneath, with prominent veins. Branches pubescent. *h.* 1ft. to 2ft. Chili, 1832.

V. parvifolia (small-leaved). *fl.* rose-coloured; peduncles shorter than the leaves. July. *l.* snowy beneath, obscurely veined. Branches cobwebby. *h.* 1ft. to 2ft. Chili, 1832.

VIVIANIEÆ. A tribe of *Geraniaceæ.*

VOANDZEIA (*Voandzou* is said to be the name of the plant in Madagascar). SYN. *Cryptolobus.* ORD. *Leguminosæ.* A monotypic genus. The species is a shortly-creeping, stove herb. Its flower-stalks, like those of *Arachis hypogæa*, bend down after flowering, and increase in length, so that the young pods are pushed into the earth, beneath which they ripen. For culture, *see* **Arachis.**

Voandzeia—*continued.*

V. subterranea (underground). Bombarra Ground Nut; Underground Bean. *fl.* pale yellow, partly unisexual, partly perfect; two upper calyx teeth or lobes connate; standard orbicular; peduncles short, axillary, few-flowered. July. *fr.*, pods irregularly sub-globose, two-valved. *l.* long-petiolate, pinnately trifoliolate, stipellate. *h.* 3in. Tropics, 1823.

VOCHISIA. *See* **Vochysia.**

VOCHYA. A synonym of **Vochysia** (which *see*).

VOCHYSIA (*Vochy* is the Guiana name of *V. guianensis*). Sometimes spelt *Vochisia.* SYNS. *Cucullaria, Strukeria, Vochya.* ORD. *Vochysiaceæ.* A genus embracing about forty species of stove shrubs or often tall trees, inhabiting Brazil, Guiana, Eastern Peru, and New Grenada. Flowers yellow, odorous, rather large, in compound, elongated racemes or panicles; sepals five, connate at base, the posterior one large and often spurred; petals one to three, linear or spathulate, two of them smaller than the other; fertile stamen one; staminodia two; pedicels bibracteolate. Leaves decussately opposite or whorled, often coriaceous, sometimes prettily veined, as in *Calophyllum;* stipules small, subulate. Only a couple of the species have been introduced. Both are trees, thriving in a mixture of loam and peat. They may be increased by ripened cuttings, inserted in sand, under a glass, in heat.

V. guianensis (Guiana). Copai-yé-wood. *fl.*, spur spreading; racemes simple, erect, terminal, dense-flowered. August. *l.* opposite, obovate-oblong, shortly acuminate, glabrous on both sides. *h.* 12ft. and upwards. Guiana, 1822. (A. G. i. 6.)

V. tomentosa (tomentose). *fl.*, racemes terminal, loose, slightly nodding. August. *l.* opposite, oval-oblong, long-acuminate, attenuated at base, glabrous above, ferruginous-tomentose beneath. *h.* 25ft. Guiana, 1826.

VOCHYSIACEÆ. A small natural order of trees, often gigantic, with copious, resinous juice, rarely erect, sarmentose, or climbing shrubs, confined to tropical America. Flowers irregular, hermaphrodite, often large; sepals five, free or connate at base, or rarely adnate to the ovary, the two outer ones often smaller, the two anterior larger, the posterior often largest, spurred or gibbous at base; petals hypogynous, or inserted on the top of the calyx tube, one, three, or rarely five, when one is protruded between the blade of the anterior sepals, clawed; stamens inserted with the petals, usually fertile, the rest imperfect; filaments usually thick, excrescent, subulate; pedicels jointed and bracteate; inflorescence variable. Fruit usually capsular, rarely a winged samara. Leaves opposite, whorled, or alternate, shortly petiolate, coriaceous, quite entire; stipules small, reduced to glands, or wanting. Branches usually opposite or whorled. The order embraces seven genera, and about 100 species. Examples: *Qualea, Trigonia, Vochysia.*

VOHIRIA. A synonym of **Voyria** (which *see*).

VOLKAMERIA. A synonym of **Clerodendron** (which *see*).

VOLKMANNIA. A synonym of **Clerodendron** (which *see*).

VOLUBLE. Twining round some support.

VOUAPA (the Guiana name). ORD. *Leguminosæ.* A small genus (about three species) of stove, evergreen trees, natives of Guiana, now included, by Bentham and Hooker, under *Macrolobium.* Flowers racemose; calyx four-cleft, with two opposite, stipitate bracteoles at the base; petal one, flat; stamens three. Leaves unijugate. Only one species has been introduced. It thrives in a compost of sandy loam and a little peat. Propagation may be effected by ripened cuttings, inserted in sand, under a glass, in heat.

V. bifolia (two-leaved). *fl.* violet; calyx lobes spreading; stamens nearly equalling the corolla; bracts elevated-uninerved. May. *l.*, leaflets sessile, ovate, acuminate, oblique. *h.* 10ft. 1823. The proper name of this plant is now *Macrolobium bifolium.*

VOUAY. A synonym of **Geonoma** (which *see*).

VOYRIA. (*Voyra* is the Guiana name of one of the species). SYNS. *Humboldtia* (of Necker), *Leiphaimos, Lita, Vohiria.* ORD. *Gentianeæ.* A genus comprising about sixteen species of dwarf, leafless, stove herbs, found growing on putrid wood and leaves in tropical America and (one species) Africa. Flowers white, yellow, orange, or rarely blue or pink, solitary or few in a cymose cluster; calyx tubular or campanulate, four or five-toothed or lobed; corolla salver-shaped, with an elongated tube and four or five twisted, spreading lobes; stamens four or five, included; filaments filiform or very short. Scales minute, opposite or the lower ones rarely alternate. The species are probably not now in cultivation.

VRIESIA. Included under **Tillandsia** (which *see*).

VULPIA. Included under *Festuca.*

WAAHOO. *See* **Euonymus atropurpureus.**

WACHENDORFIA (named after E. J. Wachendorf, 1702-1758, a Dutch botanist, professor at Utrecht). SYN. *Pedilonia.* ORD. *Hæmodoraceæ.* A small genus (seven

FIG. 206. WACHENDORFIA THYRSIFLORA.

Wachendorfia—*continued.*

species have been enumerated, but probably not more than three are truly distinct as such) of greenhouse or half-hardy, tuberous-rooted, perennial herbs, confined to South Africa. Flowers in terminal panicles, often villous; perianth yellow, oblique, the tube wanting; segments narrow or obovate-oblong, the outer ones, especially the back one, dissimilar to the rest, decurrent to the pedicels; stamens three. Leaves few, ensiform or rarely linear, sometimes large, more or less plicate-veined. Stem erect, sometimes thickened at base. A mixture of very sandy loam and a little peat is well suited to the requirements of Wachendorfias. If planted out in a pit or frame, where protection from frost can be ensured, they will flower much stronger than if kept in pots. Little or no water should be given during the resting season. Propagation may be effected by offsets, or by seeds. Some of the species will thrive in the open air in the South of England if planted in a sheltered position.

W. brevifolia (short-leaved). *fl.* nodding; perianth crimson, intermixed with tawny-yellow, softly hairy outside; raceme loose. April. *l.* lanceolate, five-nerved, plicate, villous, distichous, about 6in. long, falcately diverging. Stem 1ft. high, green, hairy. 1795. (B. M. 1166.)

W. hirsuta (hairy). *fl.* drooping; perianth red in bud, golden-yellow when expanded; peduncles four or five-flowered, secund; panicle spreading; bracts villous. April. *l.* linear-ensiform, three-nerved, villous. Stem 1½ft. high, villous. 1687. (B. M. 614.) SYN. *W. villosa* (A. B. R. 398).

W. paniculata (paniculate). *fl.*, perianth golden-yellow, the segments pubescent outside, rubicund, obovate; pedicels racemose, secund, pubescent; peduncles spreading, three to five-flowered. April. *l.* ensiform, three-nerved, bifarious, one-third the length of those of *W. thyrsiflora*. Stem greenish, corymbose-paniculate. *h.* 1½ft. 1700. (B. M. 616.) *pallida* is a form with a pale yellow perianth. (B. M. 2610.)

W. thyrsiflora (thyrse-flowered).* *fl.* in a terminal spike, the rachis angular; perianth yellow, the lobes cuneate-lanceolate; lower branchlets of the spike three or four-flowered. May. *l.* ensiform, five-nerved, glabrous. Stem nearly simple. *h.* 2ft. 1759. See Fig. 206. (B. M. 1060.)

W. villosa (villous). A synonym of *W. hirsuta*.

WAFER ASH. A common name for **Ptelea trifoliata** (which *see*).

WAHLBOMIA. A synonym of **Tetracera** (which *see*).

WAHLENBERGIA (named after George Wahlenberg, of Upsala, 1780-1851, author of "Flora Lapponica," &c.). SYN. *Schultesia* (of Roth). Including *Cervicina* and *Edraianthus*. ORD. *Campanulaceæ*. A large genus (nearly eighty species) of greenhouse or hardy, annual, perennial, or woody-stemmed herbs, mostly natives of the Southern hemisphere, especially South Africa; a few inhabit the tropics of America and the Old World, and the Mediterranean region; and one species is broadly distributed over Western Europe. Flowers often blue and nodding; calyx tube adnate, hemispherical, turbinate, or obconical-oblong, the limb five, rarely three or four-parted; corolla campanulate, tubular, sub-rotate, or funnel-shaped, the limb shortly or rarely deeply five-cleft, very rarely three or four-cleft; stamens free of the corolla; inflorescence often irregularly centrifugal; peduncles terminal, lateral, or axillary, solitary or variously paniculate. Capsules erect, inferior or half-superior. Leaves alternate or rarely opposite. The best-known species are here described. For culture, *see* **Campanula.**

W. albo-marginata (white-margined). A synonym of *W. saxicola*.

W. capensis (Cape). *fl.* at first drooping, but at length nearly erect; corolla bluish-green outside, dark blue inside at the bottom, greenish at the origin of the violaceous lobes, spotted with black within the lobes at the recesses; peduncles elongated, one-flowered. July. *l.* ovate-lanceolate or lanceolate, pilose, irregularly toothed, 1in. to 2in. long. Stem 1ft. to 1½ft. high. Cape of Good Hope, 1819. Half-hardy annual. SYNS. *Campanula capensis* (B. M. 782), *Roella decurrens* (A. B. R. 238).

W. capillacea (capillary). *fl.* in a terminal, leafless panicle, on pedicels; corolla blue, ¼in. long, funnel-shaped. May. *l.* numerous, alternate, fascicled, linear-filiform, entire, ¼in. to ½in. long. Stems erect, 1ft. to 1½ft. high. South Africa, 1822. Greenhouse perennial.

Wahlenbergia—*continued.*

W. dalmatica (Dalmatian). A synonym of *W. tenuifolia*.

W. gracilis (slender). Australian Harebell. *fl.* very variable in size and form; calyx three to five-lobed; corolla blue, purplish, or white, ⅛in. to ½in. long, three to five-lobed. April. *l.* ½in. to 2in. long; radical ones spathulate, petiolate, toothed; cauline ones sessile, linear-oblong, entire, toothed, or sinuate, acute or acuminate, rarely spathulate. Stem 6in. to 24in. high. New Zealand, &c., 1794. A slender, greenhouse annual. SYNS. *Campanula capillaris* (L. B. C. 1406), *C. gracilis* (B. M. 691; S. E. B. 45).

W. hederacea (Ivy-like).* *fl.* one to a peduncle, leaf-opposed; corolla pale blue, ⅛in. long, the lobes recurved. July and August. *l.* all petiolate, orbicular or cordate, angled or obscurely lobed, ⅛in. to ½in. in diameter, the upper ones often opposite. Stems filiform, creeping. Europe (Britain). Annual. SYN. *Campanula hederacea* (Sy. En. B. 875).

W. Kitaibelii (Kitaibel's).* *fl.* disposed in terminal, bracteate groups; corolla blue, with a tinge of purple; bracts acuminate, dentately sub-serrated. Summer. *l.*, radical ones crowded, linear-subulate, remotely denticulate. Stems purplish, beset with soft pili. *h.* 6in. Transylvania. A tufted, hardy perennial. (B. M. 6188.)

W. saxicola (rock-loving).* New Zealand Bluebell. *fl.* pale lilac, erect; corolla campanulate, thrice exceeding the calyx; scape solitary, long, one-flowered. June. *l.* all radical, usually rosulate, spathulate, long-attenuated to a flat, ciliated petiole, above usually hairy, entire or crenate-serrated, white and thickened on the margins. *h.* 2in. to 8in. New Zealand. Greenhouse perennial. (B. M. 6613.) SYNS. *W. albo-marginata* *W. vincæflora* (L. & P. F. G. ii., fig. 142).

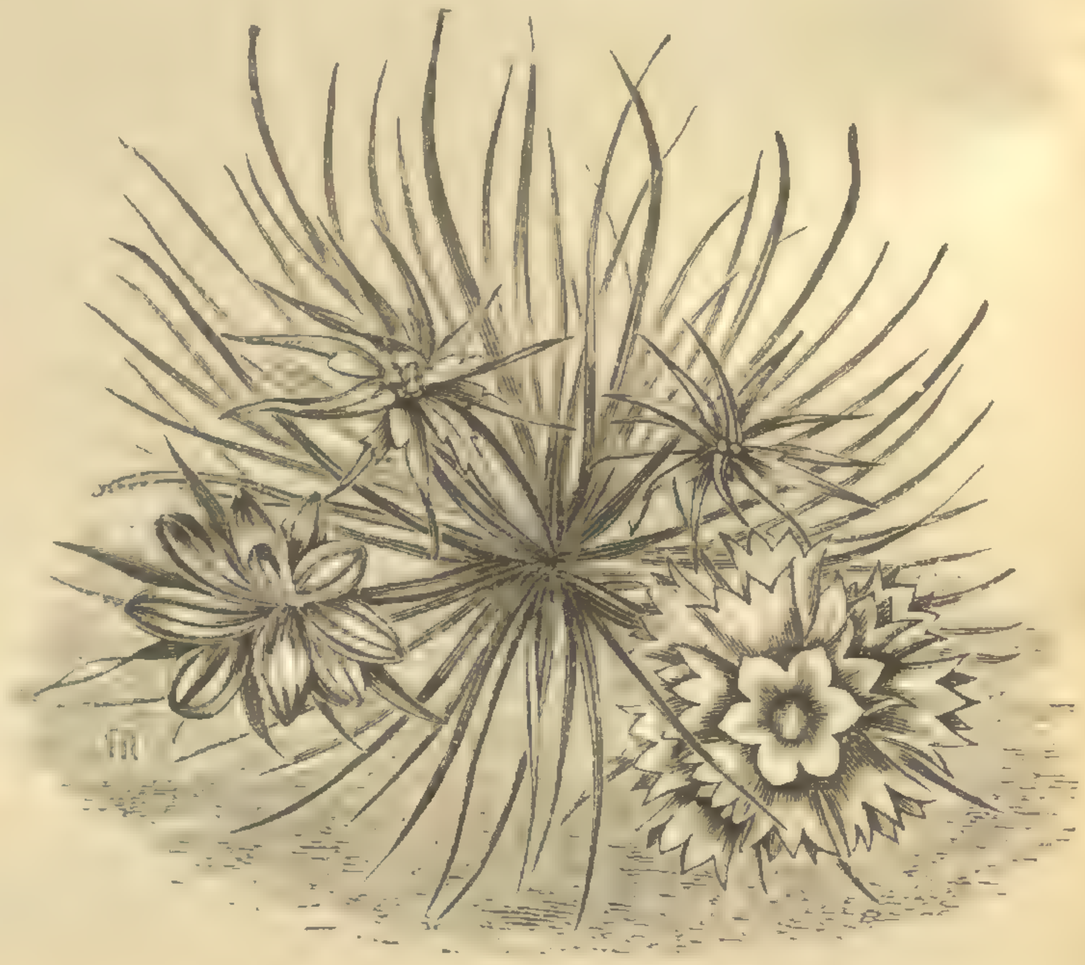


FIG. 207. WAHLENBERGIA TENUIFOLIA.

W. tenuifolia (slender-leaved).* *fl.* six to ten in a dense, terminal, bracteate tuft; calyx lobes bristly-ciliate; corolla violet-blue, white at the base. June and July. *l.* linear, entire, with bristly margins. Stems pilose, purplish, tufted. *h.* 3in. to 6in. Dalmatia, 1879. Hardy perennial. See Fig. 207. (B. M. 6482.) SYNS. *W. dalmatica*, *Edraianthus tenuifolius*.

W. tuberosa (tuberous-rooted).* *fl.* white, marked on the outside with bright rose-red bands, numerous at the tips of the paniculate branches, ½in. long, campanulate, erect. Summer. *l.* linear, acute, spreading, 1in. long, one-nerved. Stems slender, erect, 6in. to 2ft. high, loosely branched. Juan Fernandez, 1875. A remarkably floriferous, tuberous-rooted, greenhouse perennial. (B. M. 6155; R. G. 1877, p. 213.)

W. vincæflora (Periwinkle-flowered). A synonym of *W. saxicola*.

WAHLENBERGIA (of Blume). A synonym of **Webera** (which *see*).

WAHOO. *See* **Ulmus alata.**

WAILESIA (named in honour of G. Wailes, a great collector of Orchids). SYNS. *Dipodium* (now the correct name), *Leopardanthus*. ORD. *Orchideæ*. A small genus (about six species) of stove, terrestrial Orchids, natives

Wailesia—*continued.*

of the Malayan Peninsula and Archipelago, the Pacific Islands, and Australia. Flowers frequently dotted, rather large, in simple racemes; sepals and petals sub-equal, free, spreading; lip erect, adnate to the column, slightly gibbous or very shortly saccate at base, three-lobed to the middle, the lateral lobes narrow or triangular, the middle one longer; column erect, semi-terete; pollen masses two. Leaves, when present, narrow, coriaceous. Stems leafy at base, or the floriferous ones leafless. Only two species have been introduced. For culture, *see* **Bletia.**

W. picta (painted). *fl.*, sepals and petals pale ochre within, externally yellow, with reddish-brown spots, oblong, acute; lip extended in a sac, trifid, white at base, the rest pale purple, obscurely striated; peduncle above 9in. long, with a few distant sheaths, racemose at apex; bracts very short. *l.* oblong-lanceolate, acuminate. Adventitious roots ascending. Java, 1849. SYNS. *W. rosea* (P. M. B. xvi., p. 321), *Dipodium pictum* (R. X. O. 107, ii.-iv.).

W. punctata (dotted). *fl.* more or less red, usually spotted with purple; sepals and petals six to eight lines long; lip as long or rather longer, the basal pouch or gibbosity very short, the middle lobe obovate-oblong, twice as long as the erect lateral ones; raceme sometimes very short, occupying one-third of the stem. Stem erect, 1ft. to 2ft. high, leafless, with a few sheathing, loosely imbricated scales. Australia 1822. SYNS. *Dendrobium punctatum* (S. E. B. i. 12), *Dipodium punctatum* (B. R. 1980).

W. rosea (rose-coloured). A synonym of *W. picta.*

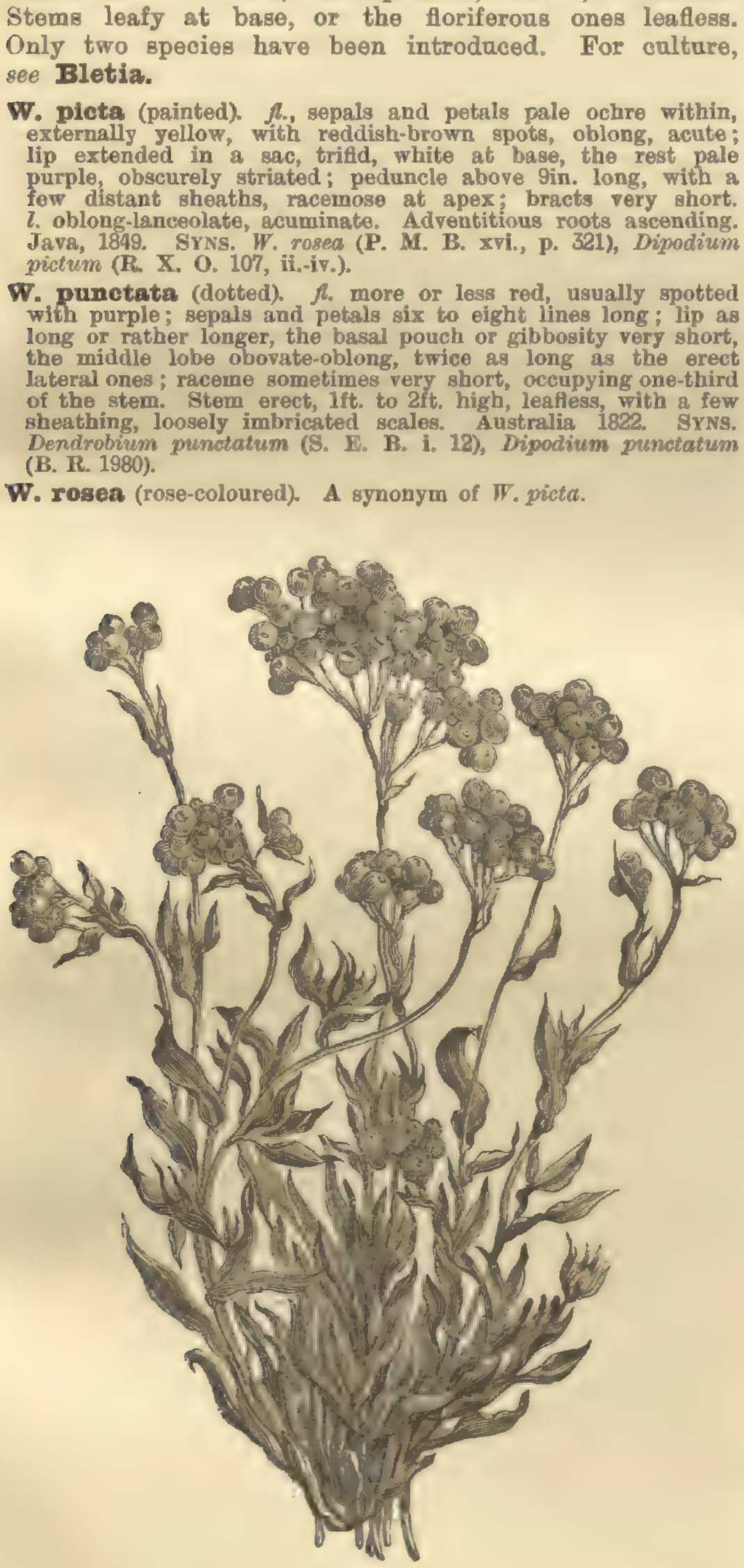


FIG. 208. UPPER PORTION OF PLANT OF WAITZIA AUREA.

WAITZIA (named in honour of F. A. C. Waitz, who travelled in Java, and wrote on the plants of that island). SYN. *Viraya.* Including *Morna.* ORD. *Compositæ.* A genus comprising half-a-dozen species of pretty, greenhouse, annual, Australian herbs. Flower-heads ("everlasting") in terminal corymbs, or rarely in oblong, leafy

Waitzia—*continued.*

racemes; involucral bracts all coloured and petal-like, imbricated in many rows; receptacle without scales; florets numerous, all hermaphrodite, tubular, five-toothed; achenes terminating in a slender beak. Leaves alternate, linear. The best-known species are here described. For culture, *see* **Celosia.**

W. acuminata (taper-pointed). A synonym of *W. corymbosa.*

W. aurea (golden).* *fl.-heads* rather larger, fewer, and in a looser corymb, than in *W. corymbosa*; involucre golden-yellow or tinged with brown, the bracts distinctly exceeding the florets. Summer. *l.* resembling those of *W. corymbosa.* *h.* 1ft. to 2ft. 1835. See Fig. 208. SYN. *Morna nitida* (B. R. 1941).

W. corymbosa (corymbose). *fl.-heads* usually numerous, in a dense, terminal corymb; involucre pale or dark yellow, white, or light pink, the outer bracts passing into small scales. Summer. *l.* linear, the lower ones often 2in. to 3in. long, stem-clasping at base, the margins revolute. *h.* 1ft. to 2ft. 1864. Plant scabrous-pubescent or hoary. (B. M. 5443.) SYN. *W. acuminata* (R. G. 401).

W. grandiflora (large-flowered). *fl.-heads* bright yellow, much larger than those of *W. aurea.* Summer. *l.* much resembling those of *W. aurea,* but less hairy. *h.* 1ft. to 2ft. 1863.

W. nivea (snowy).* *fl.-heads* rather large, usually few in a loose corymb; involucral bracts pure white or pink, or very rarely pale yellowish, not exceeding the florets. Summer. *l.* linear, scabrous-pubescent or almost glabrous. *h.* 1½ft. 1836. SYN. *Morna nivea* (B. R. 1838, 9).

W. Steetziana (Steetz'). *fl.-heads* solitary or in loose corymbs, smaller than in *W. nivea;* involucre varying from a pure white to a pale or bright yellow, hemispherical, about ½in. in diameter. Summer. *l.* linear. *h.* less than 1ft. 1861. SYN. *W. tenella* (B. M. 5342).

W. tenella (tender). A synonym of *W. Steetziana.*

WAITZIA (of Reichenbach). A synonym of **Tritonia** (which *see*).

WAKE ROBIN. A common name for *Arum maculatum* and *Trillium grandiflorum.*

WALDSCHMIDIA. A synonym of **Limnanthemum** (which *see*).

WALDSTEINIA (named in honour of Count Francis von Waldstein, 1759-1823, a German botanist and author). Including *Comaropsis* (in part). ORD. *Rosaceæ.* A small genus (four species) of hardy, creeping, perennial herbs, with the habit of *Fragaria,* natives of Central and Eastern Europe, Northern Asia, and Eastern temperate America. Flowers yellow, rather large; calyx persistent, with or without five minute bracteoles; petals five, obovate; stamens numerous; pedicels often curved; scapes bracteate, two to five-flowered. Leaves alternate, long-petiolate, entire, lobed, three to five-cleft, or three to five-foliolate with crenate or incised leaflets; stipules rather large, membranous. Only three species call for description here, the North American *W. lobata* probably not being in cultivation. They are rather pretty plants, thriving in ordinary soil. Propagation may be effected by divisions, or by seeds.

W. fragarioides (Strawberry-like).* Barren Strawberry. *fl.*, petals longer than the calyx. June. *l.* trifoliolate; leaflets broadly wedge-shaped, cut-toothed. North America, 1803. SYNS. *Comaropsis fragarioides, Dalibarda fragarioides* (B. M. 1567; L. B. C. 408).

W. geoides (Geum-like). *fl.* smaller than those of *Potentilla verna.* June. *l.* palmately three to five-lobed; lobes acutely toothed. Hungary, &c., 1804. (B. M. 2595.)

W. trifolia (three-leaved). *fl.*, petals rounded at the base, without auricles; ovary silky-villous. April and May. *l.* smaller than those of *W. geoides;* leaflets very shortly stalked, beset with long hairs. *h.* 4in. to 6in. Eastern Europe.

WALKING LEAF. A common name for **Scolopendrium rhizophyllum** (which *see*).

WALKS. Few things contribute more to the appearance of a garden than good, properly-proportioned Walks. Those that are to last in good condition must be properly made at first, as it is not an easy matter to keep repairing them, and, besides, it is seldom satisfactory. Various kinds of material are used, as much depends on what can be most readily procured. To make Walks in a proper

Walks—*continued.*

manner, and provide all the material, is rather an expensive proceeding, particularly on a large scale. Where gravel of a binding nature is procurable, it is generally preferred to other materials for the surface, as being most appropriate, and best suited for garden paths. One of the principal objects is to make Walks so that they can be used in all weathers without discomfort; but this is often somewhat difficult, for although the gravel may be of a nature which is in good condition in wet weather, it will often be rough and stony during continued drought. The amount of traffic which a Walk is likely to have over it will prove of assistance as a guide in its formation. Besides gravel, asphalte, concrete, burnt ballast, and other substances, are sometimes used for the surface. Something may generally be said in favour of Walks formed of the two first-named—*e.g.*, absence of weeds, durability when once made properly, and cleanliness at all times. Where it is necessary to have a hard, dry Walk, it may be preferable to make the surface of asphalte or concrete; but, as a rule, this is neither practicable nor desirable for garden paths where gravel is procurable in sufficient quantity. The question as to what the surface of a Walk shall be composed of, need not be further discussed, but left for settlement by individuals who have often to be guided by what materials they can procure.

Passing on to the formation of Walks, such materials as are best adapted will be referred to. One of the most important considerations is efficient drainage; this may be readily insured where the ground is undulated, but not so easily on a flat surface. Sometimes, Walks will drain themselves naturally without pipes, if the subsoil is composed of gravel; but wherever they are sufficiently wide to be of importance, and there is clay beneath, a proper system of drainage is necessary. A good plan is to lay a row of ordinary 3in. drain-pipes the full length, either beneath the centre or near one side of the Walk, and conduct the water to the best available outlet. Catch-pits, with iron gratings on the top, should be placed on both sides near the edges, and these should be connected with the drain, so that any quantity of water may run away as fast as it enters. The width to be determined upon will vary, sometimes according to the length of the Walk, and at others to the extent of the space or inclosure through which it passes. In a large, walled-in kitchen-garden, for instance, it is usually found most convenient to have a Walk running parallel with the wall all round, allowing a space of 10ft. or 12ft. between for a border, on which vegetables, &c., may be cultivated, and two others intersecting each other in the centre of the inclosure, where it is very convenient to have a water basin for a constant supply. The intersecting Walks in this arrangement may be a little wider—2ft. or 3ft.—than those running parallel with the walls; this will distinguish them as being the principal ones. In very large gardens, it may be necessary to have more divisions than these, and, in addition, small, narrow paths, for subdividing the ground, are requisite; these latter are not usually gravelled. Flower-gardens, pleasure-grounds, terraces, &c., have Walks which vary greatly in width, as a matter of course; but the system of making may be carried out similarly in all.

The nearer the two edges are to a level or an equal incline, the easier is it to proceed. When laying out a new garden or grounds, some fixed points have to be made from which the levels are taken, and their positions must correspond somewhat to the natural disposition of the ground. Assuming that the width is determined, and a new Walk is to be made, the edges, of whatever description they are, must be first levelled and prepared. The level, or an equal fall from two fixed points, may be ascertained by the use of borning-rods; a straight-edge, 10ft. to 12ft. long, and a good spirit-level, are also requisite.

Walks—*continued.*

Edges require to be finished before the Walk is made, as they are a guide for gravelling, which it should not be necessary to alter afterwards. The mode of levelling with borning-rods for the edges and the Walk is similar; the highest and lowest points at the ends of any given length are fixed by pegs driven into the ground, and from these the proper height can be readily found throughout the intervening space. To insure firm edges, they should be made up with soil that is in a workable condition, and rendered firm by thorough ramming. New Walks, that are to be 10ft. or more wide, require excavating to a depth of from 9in. to 12in., the lowest point being made in the centre or wherever the drain-pipes are intended to be laid. When these are inserted, about 6in. of rough material, such as clinkers or old bricks, should be placed above them; then a layer of something in the way of rough ballast, which should be well rammed, and the surface left in the shape which it should present when finished; and then 2in. or 3in. of fine gravel should be laid over the top. This will become much less in bulk so soon as it is trodden over and the roller applied.

The proper height of the Walk, when finished, may best be indicated by driving in wooden pegs down its centre, about 10ft. apart: the positions of these may be obtained by the levelling instruments in the same way as for the edges, and the pegs can be pulled up as the finishing coat of gravel is put on. All Walks should be kept higher in the centre than at the edges, in order that rain-water may pass readily into the gratings, and efficient surface drainage be insured. The height at which it is advisable to fix the centre of a Walk above the edges depends on the width. Walks less than 8ft. wide, and with a fall lengthways, will generally be sure to drain if the centre is kept on the same level as the verge or edging, provided the surface is made so that the gravel at the edges is about 2in. lower when the work is completed. The iron gratings may be placed 2in. below the level of the edges in almost all walks. The centres of 8ft. or 10ft. walks should be raised 1in. above the edge level, and, as a general rule, ½in. more may be added for every 2ft. width, so that a walk 28ft. or 30ft. wide would require its centre up 4in. to 6in. above the edges, to prevent water accumulating there instead of passing to the gratings. These heights will not be found too great a proportion for the widths; this always needs consideration, or the surface will not be comfortable to walk upon.

Before proceeding to put on the finishing coat of gravel, the rough material beneath must be rammed quite firm, and consolidated about equally throughout. The top gravel should be levelled with a wooden rake, used by a workman who, from experience, is able to do it properly. The want of a spit may cause a hollow place in the surface, and improper levelling has an equally objectionable effect, which will be readily apparent when rain comes. As the person levelling proceeds, another should be treading the surface crossways, and removing the levelling pegs, which, by this time, have served their purpose. A second rake must then follow, to remove any stones and inequalities caused by treading. A light roller may then be used, and afterwards a heavy one, if the Walk will carry it without the gravel clinging. It is advisable to get new gravel firmly rolled, if possible, before rain comes, as if water gets into it when loose, it often takes a long time to get a solid surface. To keep gravel Walks in good order, they must be rolled frequently when the weather allows, both in summer and winter. If the surface is too dry, but little good would result from rolling, and if too wet it might cling, or be positively injured; some judgment must, therefore, be exercised in selecting the proper times when rolling may be beneficially practised.

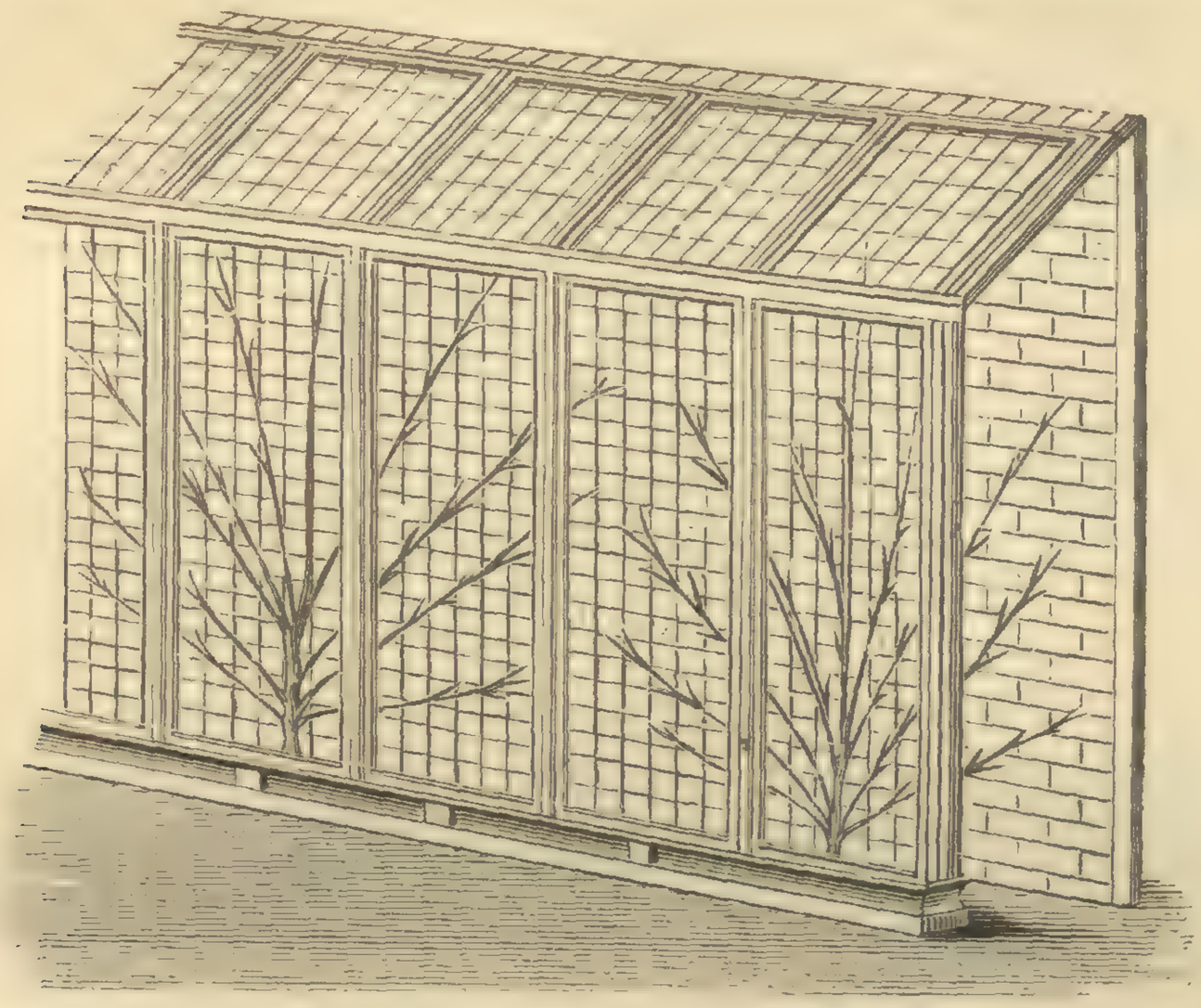


FIG. 209. WALL CASE.

WALL CASE OR FRAME. A general term applied to a glass protection sometimes put over such fruit-trees as Apricots, Peaches, and Nectarines, in unfavourable localities, where the fruits cannot be depended upon to ripen outside. A Wall Case or Frame (see Fig. 209) is, practically, an unheated, narrow house; but if glass protection without heat is unsafe against the injury caused by spring frosts, it would be preferable to incur the further expense of having a house which, for erecting, would, in many cases, not cost very much more, when the wall was already at command, and insert sufficient hot-water pipes to keep out frost. The interior would then be available, so far as space permitted, for accommodating many other plants in winter which merely require a slight protection.

WALL CRESS. *See* **Arabis.**

WALL FERN. *See* **Polypodium vulgare.**

WALLFLOWER. *See* **Cheiranthus Cheiri.**

WALLFLOWER, ALPINE. A common name for **Erysimum ochroleucum** (which *see*).

WALLICHIA (named after Dr. Nathaniel Wallich, 1786-1854, a Danish botanist, and author of several valuable works on Indian plants). SYNS. *Harina, Wrightia* (of Roxburgh). ORD. *Palmæ*. A small genus (two or three species) of East Indian, dwarf, tufted, stove Palms. Flowers yellowish, mediocre, monœcious or rarely polygamous, bracteate and bibracteolate; spathes very numerous, slenderly coriaceous, the lower ones narrower, tubular, the upper ones boat-shaped, complete, imbricated; spadices shortly pedunculate, the males drooping or decurved, ovoid, much-branched, dense-flowered, the females looser, erect. Fruit reddish or purple, ovoid-oblong, one or rarely two-celled and seeded. Leaves densely fascicled, in one species terminal and distichous, furfuraceous, unequally pinnatisect; segments solitary or the lower ones fascicled, cuneate at base, oblong, obovate, or oblanceolate, erose-toothed, the terminal one cuneate; petioles slender, laterally compressed; sheaths short, cut at the margins and furnished with long

Wallichia—*continued.*

hairs. The species require to be grown in a strong, rich soil. Propagation may be effected by seeds, when procurable; or by gradually separating the suckers, so as to allow them to make sufficient root before they are quite detached.

W. caryotoides (Caryota-like).* *fl.*, males yellowish-white, covering the spadix branches; females few, amongst the males near the bases of the branches. July. *fr.* ovate-oblong, the size of a nutmeg. *l.* few, alternate, petiolate, 3ft. to 8ft. long; leaflets sessile, 1ft. to 1¼ft. long, the lower ones in opposite fascicles, the upper ones mostly solitary and alternate, all wedge-shaped, præmorse at apex, deep shining green above, whitish beneath. India, 1825. See Fig. 210.

W. densiflora (dense-flowered). *fl.*, male spadices enveloped in large, imbricated spathes, of a dark purple, streaked with yellow; these separate, and then a dense cluster of nearly white female spadices, with violet-coloured ovaries, appears. *l.*, lower pinnæ binately fascicled, whitish below, the rest solitary, sinuate-lobed or toothed. Plant stemless. *h.* 12ft. Assam, 1840. (B. M. 4584.)

WALLISIA (of Regel). Included under **Tillandsia** (which *see*).

WALLISIA PRINCEPS (of Regel). A synonym of **Lisianthus princeps** (which *see*).

WALL PENNYWORT. A common name for **Cotyledon Umbilicus** (which *see*).

FIG. 210. WALLICHIA CARYOTOIDES

WALL PEPPER. *See* **Sedum acre.**

WALL PLANTS. These are very numerous, if the whole of the subjects requiring or benefiting by wall accommodation is considered. Kitchen-garden walls are requisite for the cultivation of fruit-trees that will not succeed in the open; and these are rarely given up to other plants, excepting such as Tomatoes, which, in favourable aspects, succeed during summer in any intervening spaces. The term Wall Plants is usually meant to have reference to those subjects which, from their natural habit of growth, require a wall; but it may also include very many others that, from their quick-growing nature, may be utilised for rapidly covering a large surface, or, from being more or less tender, are cultivated with greater certainty, and brought to greater perfection, by the shelter which a wall affords. Walls in greenhouses, stoves, and most other glass structures, may also be utilised for the production of some crop, or covered with some plant to impart a much better appearance than would otherwise be the case. Of hardy plants that succeed admirably on walls, the following, amongst many others, may be mentioned: *Aristolochia Sipho*, *Chimonanthus fragrans*, many species and hybrids of *Clematis*, Cotoneasters, *Cratægus Pyracantha*, Escallonias, *Euonymus*, *Forsythia suspensa*, *Garrya elliptica*, Ivies, *Jasminum officinale* and *J. revolutum*, Loniceras, Magnolias, *Pyrus japonica*, Roses, *Tecoma radicans*, hardy Vines, Virginian Creepers, *Wistaria sinensis*, &c. Camellias are sometimes grown very successfully as Wall Plants in greenhouses; and apart from their flowers, the foliage is always attractive. Strong-growing kinds of Tea Roses do well on walls in any cool house, or on the back wall in a peach-house. Fuchsias, Heliotropes, Jasminums, Passifloras, &c., are well-known wall-furnishing plants. *Ficus stipulata* will cover a wall in a cool house or stove with green verdure as dense as Ivy does outside; it is, therefore, a very desirable subject.

WALLROTHIA (of Roth). A synonym of **Vitex** (which *see*).

WALLROTHIA (of Sprengel). Included under **Seseli** (which *see*.)

WALL RUE. *See* **Asplenium Ruta-muraria.**

WALLS. These are requisite for the proper cultivation of fruit-trees and numerous other subjects which require shelter and a warm situation; and the less favourable aspects which must of necessity be presented by one, or sometimes even both of the surfaces, may also be utilised for some purpose. In a kitchen garden the Walls serve as a boundary for the inclosure; and as, during sunshine, they accumulate a considerable amount of heat, which is given off when the air becomes cooled, most of the trees on southern aspects, at any rate, are in a warmer temperature even at night than they would be in the open ground. Amongst the principal fruits which in nearly every locality require Wall protection are Apricots, Figs, Nectarines, and Peaches. Morello and dessert Cherries, dessert Pears, and Plums, are also best, as a rule, on Walls; the Morello succeeds well in a north aspect, which is a great advantage.

The actual work of construction does not usually come within a gardener's province, but he has, not unfrequently, to propose the dimensions or give instructions how the work is to be executed. In a large garden, the Walls should be 10ft. to 12ft. high—the top of anything less than this would soon be reached by any of the fruit-trees named above. For a small garden, these heights might be too much for the inclosed area to be proportionate, and 8ft. would then be sufficient, but high Walls are always far superior to low ones. The materials commonly used are bricks (the dimensions of which are fairly uniform in all localities) and mortar. It is most important

Walls—*continued.*

that garden Walls be substantially built, and the foundations made to rest on a solid bottom; the weight will, in course of time, cause settlements, if any portion of the ground is of a different character, and the base is, consequently, not of an equally solid description throughout. The foundations should be, at the base, quite double the width of the wall that they are intended to support. The proper thickness depends considerably on the height. Walls that are only to be carried 6ft. or 8ft. high may be constructed, if the material and workmanship are good, in 9in. work—that is, the length of one brick. Higher Walls than these should not be less than 14in thick, while 18in. is much more substantial, and better in all ways. These dimensions are readily obtained by using bricks: 14in. allows the length of one and the width of another, and 18in. the length of two, for the total thickness. Walls are sometimes constructed with less solidity than this, and supported by occasional buttresses on one or both of the sides; these are objectionable unless really needed, because of their interference with the proper training of trees, and it may be pointed out that they swallow up a considerable quantity of bricks that would help to build a thicker and more substantial Wall, and one which would be more satisfactory in the long run. All kitchen-garden Walls should be provided with a coping projecting over from 2½in. to 3in. on each side, and grooved beneath the under side of the projection for drip. Stone, if not too expensive, is the best material for copings; the entire part at the top should be slightly higher than the sides, so that water may pass off readily. For the protection of tender fruit-blossoms in spring, when this is necessary, it is better to put up a temporary board coping from 6in. to 9in. wide, on brackets fixed to the Wall, than to make the permanent one too wide. This can easily be removed when no longer required; and if the edge of the board is placed beneath the stone, and the brackets are of triangular shape, there will be no danger of drip on the blossoms. Walls should always be kept in good repair: the holes caused by nailing in the mortar, and larger ones often caused by the action of frost, are invariably harbours for insects. Where insects are very numerous, as is often the case in old Walls, a dressing of fresh lime and sulphur, thickened with a little clay, and made a dark colour by the addition of sufficient soot, may be annually used, if desired. It should be applied during the time the trees are bare, when a little falling on them will seldom do any harm. *See also* **Garden.**

WALLWORT. An old name for **Sambucus Ebulus** (which *see*).

WALNUT (*Juglans regia*). The common Walnut is a well-known tree, fine in foliage as an ornamental subject for planting in parks, paddocks, &c., and useful for its fruits, both in the young and ripened state, and for the timber, which is largely employed by cabinet-makers and others, and for the purpose of making gun-stocks. Propagation is effected by seeds; also by budding, grafting, and inarching for perpetuating varieties. Seeds of Walnuts designed for timber-trees, are best sown where the trees are intended to develop, if this is practicable; or they may be stratified through winter, and planted in nursery rows, about 2ft. apart, in February or March following. The young trees may either be transplanted in the autumn, or allowed to remain a year longer; they each form a long tap-root, which proceeds straight down, and if transplanting is intended, it must not be too long deferred in the first place. Ring-budding and shield-budding, with a pushing eye, and also whip and cleft grafting, are successful methods of propagation, and all are performed while the sap is in active circulation. Walnut-trees succeed in any fairly good soil; if of good depth and resting on a gravelly bottom, it is

Walnut—*continued.*

to be preferred. The delicate young shoots and fruits are liable to be much injured by late spring frosts.

Walnuts for pickling should be gathered when the shell is quite soft, so that a needle will readily pass through.

FIG. 211. FRUITING BRANCH OF WALNUT (*Juglans regia*).

The ripe fruits (see Fig. 211) drop, and their husks open and disclose the nut in a way which is generally familiar. Squirrels will collect large quantities and store them; if there are any of these animals about, the crop must be secured as soon as ripe, or the depredators destroyed. Walnuts may be preserved in several ways for use during winter: dried and packed in clean jars or casks, with alternate layers of sand, they keep well; or placed in jars with close-fitting lids, and buried in the ground. Placing them in jars and sprinkling them with salt, and burying in oak sawdust, are other methods of preservation which have been recommended.

DISEASES, &c. The Walnut is not affected by any disease of sufficient importance to call for special remark; though several insects and Fungi attack the tree and fruit, they do no appreciable harm in England.

SORTS. Small-fruited varieties are best for growing to produce fruit. Besides the common Walnut, which is an abundant bearer, the following are most desirable:

DWARF PROLIFIC, a dwarf-growing variety which bears abundantly when quite small. HIGHFLYER, early, of medium size, thin-shelled. THIN-SHELLED, an excellent variety, with a thin, tender shell, well filled; of better quality than the common variety.

WALNUT-TREE, INDIAN. A common name for **Aleurites triloba** (which *see*).

WALSURA (altered from *Wallursi*, the Telinga name). ORD. *Meliaceæ*. A genus comprising about a dozen species of stove, evergreen trees, limited to India and the Indian Archipelago. Flowers small; calyx short, five-cleft or five-parted; petals five, ovate-oblong, spreading; filaments ten or eight; panicles axillary and terminal. Leaves one to five-foliolate; leaflets opposite, quite entire, pale beneath. Perhaps *W. robusta* is not now in cultivation. *W. piscidia* is met with in botanic gardens. They require similar treatment to that recommended for **Chloroxylon.**

W. piscidia (fish-poison). *fl.* sordid-yellow; petals imbricated; staminal tube half the length of the petals, equally ten-cleft. June. *l.* 2in. to 7in. long; leaflets 1in. to 4in. long, ⅜in. to 1¾in. broad, sub-ternate, elliptic, obtuse, often retuse, glabrous, shining, pale beneath *h.* 20ft. India, 1830. The bark acts as a fish-poison.

W. robusta (robust). *fl.* white, ⅛in. long; panicles nearly as long as the leaves, densely puberulent. June. *l.* 6in. to 12in. long; leaflets five, sometimes three, ovate or elliptic, acuminate, shining. *h.* 20ft. and upwards. India, 1827.

WALTHERIA (named in honour of Aug. Fried. Walther, 1688-1746, Professor at Leipzig). ORD. *Sterculiaceæ*. A genus embracing about sixteen species of stove, stellate-pubescent herbs, sub-shrubs, or rarely trees; one is broadly dispersed over temperate regions, two are found in Africa, two in Oceania, and the rest are American. Flowers often rather small, glomerate or cymose in the axils, or disposed in terminal heads, racemes, or panicles; calyx five-cleft; petals five. Leaves serrated. The species possess little beauty, and are probably now unknown to cultivation.

WAMPEE-TREE. *See* **Cookia.**

WANDERING JEW. *See* **Saxifraga sarmentosa.**

WANGHEE OR WHANGEE CANE. *See* **Phyllostachys nigra.**

WARATAH-TREE. *See* **Telopea speciosissima.**

WARDEN. An old name for a variety of Pear used in making "Warden pies."

WARDIAN CASE. Wardian Cases are invaluable for packing pot-plants that have to travel long sea voyages. By their aid many new and rare plants of foreign climates are annually imported into this country, and others which we possess are exported in a similar way. The importation and exportation of plants in Wardian Cases is mostly conducted by some of the principal nurserymen and those in charge of botanic gardens, who usually make special arrangements, so that what they send away or have sent to them shall be of sufficient value and importance to warrant the outlay incurred, which is often somewhat considerable. Certain seasons are also selected for sending plants to particular countries abroad, such as are best calculated to favour a safe voyage in respect of the effect of climatic conditions on the plants during transit. Wardian Cases are made in different sizes to hold small or somewhat large plants, as the case may be. The pots are usually packed in soil or cocoa fibre, and held in position by narrow strips of wood, which are firmly secured by nailing them close down on the top of each inside the Case. The roof, if it may be so called, is made of two frames which fit on the ends and meet together at the top, where they form a ridge. They are glazed, and the glass protected by thin pieces of wood, which are fixed a short distance apart, so as to allow as much light as possible to pass to the plants inside. One or both of these sash-frames is movable, and may be unscrewed and taken off for the purpose of packing or unpacking. When travelling, Wardian Cases are nearly air-tight, so that but little evaporation or change of air can take place, only a small circular hole, covered with perforated zinc, being allowed at each of the ends near the top. The frames in which the glass is embedded are made air-tight by being fitted up with putty before being screwed. Instructions are invariably given as to the part of a ship where Wardian Cases should be placed during the voyage.

Other kinds of Wardian Cases are those used for plant-culture in drawing-rooms, &c., and in ferneries, for the special accommodation of Filmy Ferns, and such as require a very moist atmosphere. The former, with

Wardian Case—*continued.*

the stands on which they are placed, are usually rendered ornamental for associating with the surroundings, and have a fine appearance when filled with green Ferns, small foliage plants, and Lycopods. In Ferneries, such cases may be quite plain externally; they, of course, answer their purpose equally well for preserving moisture inside.

WARENCE. An old name for Madder (*Rubia tinctorum*).

WARMOT. An old name for Wormwood (*Artemisia*).

WARREA (named by Lindley in honour of its discoverer, Frederick Warre, who sent plants to the Loddiges, by whom it was figured under the name of *Maxillaria Warreana*). ORD. *Orchideæ.* A small genus (according to Bentham and Hooker, one or two species) of stove, terrestrial Orchids, natives of Brazil, Peru, Columbia, &c. Flowers showy, shortly pedicellate; sepals and petals broad, concave, the lateral ones oblique at base, adnate to the foot of the rather long, clavate column; lip affixed to the foot of the column, sessile, very shortly contracted towards the base and incumbent, at length erect, broad, and concave, the lateral lobes scarcely prominent, the middle one expanded, entire or bifid, the disk having elevated, fleshy lines; pollen masses four; racemes elongated, loose; scapes leafless, many-sheathed, tall, simple; bracts short. Leaves few, distichous, elongated. Stem leafy. *W. tricolor* and its variety require similar treatment to that recommended for **Phaius.** Several species formerly included here will now be found under **Zygopetalum.**

W. tricolor (three-coloured).* *fl.* rather large, globose, drooping; sepals and petals yellowish-white, the two lateral sepals below ending in a blunt spur; lip yellow and deep purple, white at the edge, obovate, cucullate at base, the disk having three ridges; scapes lateral, purple at the joints, about 2ft. high, bearing an eight to ten-flowered raceme. June and July. *l.* long-petiolate, lanceolate, plicate. Pseudo-bulbs oblong, terete attenuated, jointed. Brazil, 1843. (R. X. O. 24.) SYN. *Maxillaria Warreana* (B. M. 4235; L. B. C. 1884).

W. t. stapelioides (Stapelia-like). *fl.*, sepals and petals barred with brown internally; lip with a broad, purplish-brown stripe in front. New Grenada, 1872.

WARSZEWICZELLA. Included under **Zygopetalum** (which *see*).

WARTED GOURD. *See* **Cucurbita Pepo verrucosa.**

WARTS. Hard or firm excrescences.

WASHINGTONIA (so called after George Washington, the great American patriot). ORD. *Palmæ.* A small genus (one or two species) of tall, greenhouse Palms, natives of South California and Arizona. Flowers white, hermaphrodite; spathes elongated, membranous, cut, glabrous; spadices elongated, copiously paniculate-branched, the branches slender and flexuous. Fruit black, small, ellipsoid, one-celled, one-seeded. Leaves terminal, ample, spreading, orbicular, flabellately plaited, cut nearly to the middle; the segments induplicate, with filiferous margins; petioles elongated, robust, flat-convex, the margins very spiny. For culture, *see* **Chamærops.**

W. filifera (thread-bearing).* *fl.* perfect, solitary, nearly sessile upon the slender branches of the panicle. *l.* circular, flabelliform; petioles armed with stout, hooked, marginal spines; ligule large and adpressed, coriaceous, glabrous; rachis short; blade deeply cleft along the upper folds and copiously filiferous. Flowering stems 8ft. to 10ft. long. A tree 20ft. to 40ft. high. California. SYNS. *Brahea filamentosa, Pritchardia filamentosa, P. filifera.*

W. robusta (stout). *l.* sub-orbicular; petioles armed with strong spines, sheathing at the base; limb fan-shaped, plaited, entire to the middle, then divided into narrow, acute rays, bordered with white filaments. *h.* 6ft. to 7ft. California. (R. H. 1885, p. 403.)

WASHINGTONIA (of Winslow). A synonym of **Sequoia** (which *see*).

WASHINGTON THORN. *See* **Cratægus cordata.**

WASPS. These insects are too well known to every one to require any description of their form, colour, markings, or power of stinging. There are, however, several species of Wasps in Britain. Though they agree in so many respects that no one can fail to recognise them as Wasps; and though they are so like one another in form, in colours, and in markings that it is not very easy for any one but an entomologist to distinguish them, yet they differ in the places in which they make their nests, and in the means to be employed against them when they become troublesome in gardens.

The True Wasps, belonging to the genus *Vespa*, are all social insects, like their kindred, the Honey Bees; but, unlike the latter, there is little difference between the

FIG. 212. COMMON WASP (*Vespa vulgaris*).

sexes in outward appearance. The common Wasp (see Fig. 212) is a good representative of the whole group, the sexes differing in little but size; and the other species being distinguished chiefly by the forms and sizes of the black markings that are scattered on the yellow ground-colour, and by the presence in some of rusty-brown spots on the sides of the body. The Wasps belong to a division of the **Hymenoptera** (which *see*), which have the fore wings folded lengthwise, like a fan, when at rest, and the hind wings hidden below them. This division, besides the true Wasps, includes a large number of insects, known as Solitary Wasps, that resemble them in general form, and to some extent also in colour: but anyone familiar with the appearance of the common Wasp will find no real difficulty in distinguishing the one from the other; while to state the characteristic distinctions would require more space than is here available, without affording any corresponding advantage. The Solitary Wasps are so named because they do not live in societies like the true Wasps; and each female among them forms the cells or chambers to be occupied by the larvæ hatched from the eggs laid in them, and she stores the cells with the proper food. This frequently consists of larvæ of small Moths, or of other insects; and the Wasps that capture these should be protected by gardeners as far as possible, as they assist in the destruction of noxious insects. The Solitary Wasps make the cells for the protection of their larvæ in the most varied situations. Some females dig burrows in sandy soil, and at the end of each burrow form a cell, which is stocked with provisions, among which an egg is placed. Others tunnel in the pith of dead Rose-twigs, &c., while some take advantage of the burrows of other insects, or of any crevice, or even of empty snail-shells, in which to form the cells; and still others build mud cells, often of peculiar forms, against stones or on plants. It would be impossible to give a full account here of the exceedingly diverse habits observed among the Solitary Wasps. In regard to them it need only be added that none are injurious to gardens, while several are useful, as stated above.

To return to the Social or True Wasps, belonging to the genus *Vespa*. They are of doubtful reputation with gardeners, but are decidedly more hurtful than beneficial in gardens. It is true that they are voracious creatures, and feed largely on other insects, and that they destroy considerable numbers of noxious or troublesome species; but the benefits conferred by them in this way are more than counterbalanced by the injury they do to ripe fruits. They are very partial to apricots and plums; but, where these are not to be obtained, they attack gooseberries,

Wasps—*continued.*

leaving little but empty skins. They are extremely numerous in some seasons, while in others scarcely a Wasp can be seen. A brief account of their life-history will suggest suitable methods for lessening their numbers.

The Common Wasp (*Vespa vulgaris*) may be selected as representative of the genus in its life-history. Towards the close of autumn by far the greater number of the Wasps die; and only a few females survive the winter. The Wasps one sees in spring, exploring holes and crevices in the ground, in old walls, in heaps of rubbish, or in tree trunks, are females in search of secure retreats in which to form nests; and each one killed at this season prevents the formation of a nest during the summer. Those that find suitable localities enlarge them, if necessary, to the size required for the commencement of the nests. A very favourite locality is a mouse-hole. Each female works by herself for a time in forming her nest, the coverings and cells in which are made of a kind of paper. This substance, it is believed, is prepared from the fibres of wood rasped by the Wasps from the surface of naked trunks or of posts, rails, or other articles, moistened with a fluid from the mouths of the insects, and made into a paste. The Wasp fixes a short pillar of this to some firm body—*e.g.*, the root of a plant, or a stone, in the roof of the hole—and then forms two or three cells, mouth downwards, on the free end of the pillar, and builds an umbrella-like roof above them. In each cell an egg is laid; and, after a short time, the larvæ are hatched, and require to be tended and fed by the parent Wasp. The food given to the larvæ while young is chiefly honey, taken from Bees, or from ripe fruits; but, when the larvæ are older, they are fed on flies and other insects. When Wasps can gain access to grocers' and butchers' shops, they are apt to become troublesome in their efforts to obtain sugar and animal food from the supplies in the shops, instead of from the usual sources. As the larvæ grow, the cells have to be enlarged around them; and at last they become full-fed, spin over the

FIG. 213. PUPA OF WASP.

opening of the cell, and pass into the state of pupæ (see Fig. 213). The female Wasp continues to form new cells, and to feed the young brood; and, as soon as the perfect insects have emerged from the pupæ, they assist her in her work. The Wasps that develop in early summer are incapable of laying eggs, and are called neuters; they are, in reality, females in which the reproductive organs remain undeveloped. As the number of cells is increased, the size of the hole must be enlarged, and the outer coverings of the nest removed and relaid, of a size to permit of the nest in its new dimensions being contained within them. As the number of Wasps is augmented from the young broods, the nest increases more and more rapidly in size, and combs are added, each new one being suspended from its predecessor by numerous supports of the papery material, strengthened by an extra allowance of the gluey secretion from the insects' mouths. Space is left between the combs to permit the Wasps to move about freely, and to gain easy access to every cell. Towards the end of summer, both males and females are developed, in addition to the workers or neuters, to secure the perpetuation of the species. When the winter is near, the Wasps have been observed to tear open the cells containing larvæ, which they then destroy. The instinct to do so is a merciful one, as the larvæ would otherwise perish of starvation, from the pain of which they are saved by this speedy mode of death. Besides *V. vulgaris*, certain other species of the genus make their nests in holes; but others suspend their nests from the branches of trees or bushes (see Fig. 214). Except in situation, the latter nests agree

Wasps—*continued.*

with those formed in holes, the outer covering being made sufficiently strong to prevent injury from the weather; these nests are entered by a small hole below, or on one side near the bottom.

The Hornet (*V. Crabro*) differs from its congeners in its larger size. It is not scarce in the South of England, where it nests in hollow trees or in outhouses. The material employed by Hornets in making the paper for their nest is usually *rotten* wood. These insects sting much more severely than Wasps; but they feed almost wholly on other insects, including Wasps, and must be regarded as friends in the garden.

Remedies. In districts where Wasps are very numerous, it is often necessary to destroy them and their nests, in order to protect the fruit, and to prevent annoyance from their entering houses, and using their stings. Prevention is best secured by encouraging the capture of the females in spring, as this prevents them from commencing the nests. The numbers may also be lessened either by capturing the insects, or by destroying the nests. Wasps may be caught in summer and autumn in various simple traps

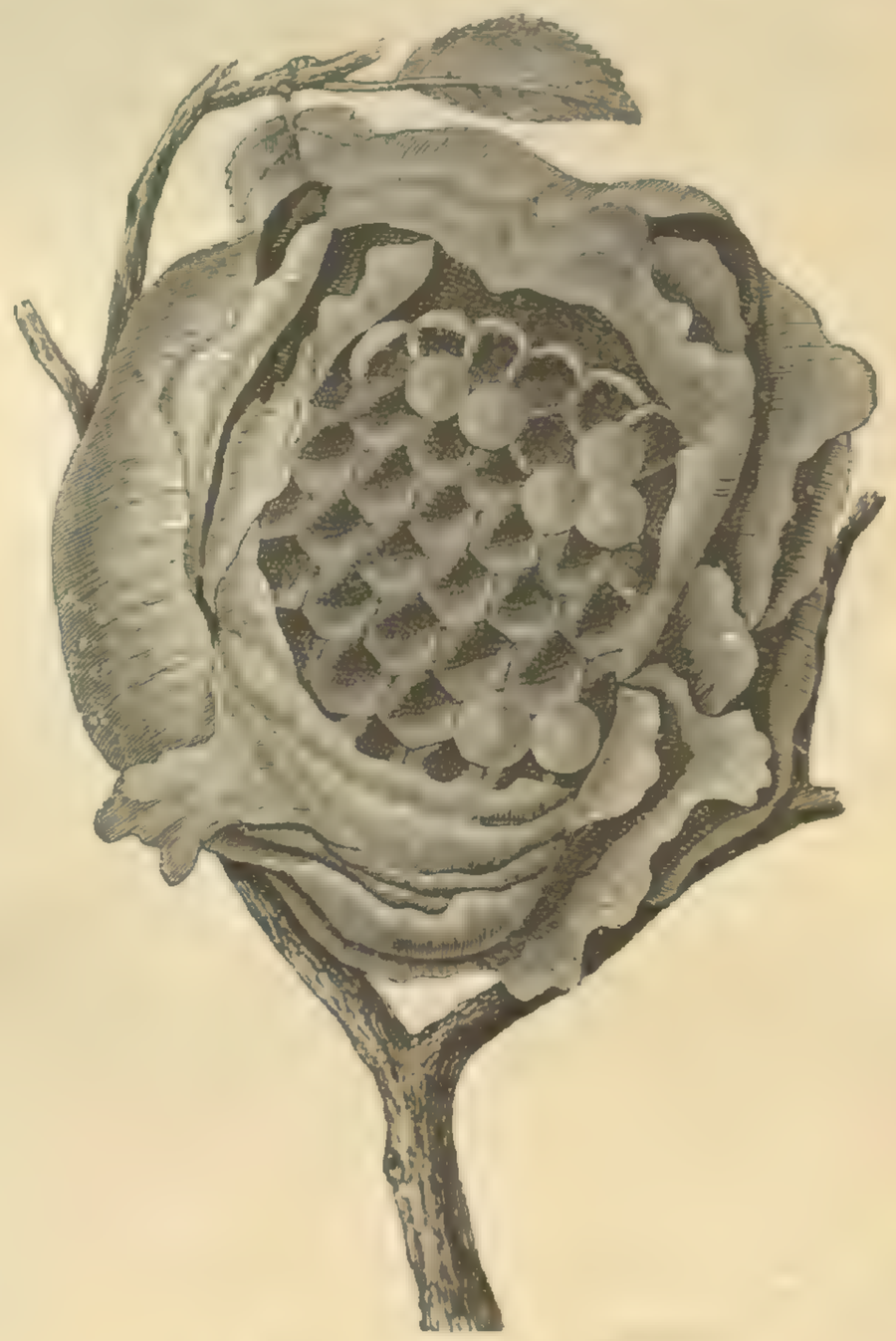


FIG. 214. NEST OF TREE WASP.

—*e.g.*, a bottle containing a little sweet fluid of any sort suspended in a tree. A good trap is easily prepared by placing a bell glass on three supports, so as to leave space for insects to fly or crawl in below to the bait (sugar, treacle, or other sweet stuff), placed in a plate under the bell glass. The latter should open at the top by a hole, and above it should be placed another glass, closed at the top. The insects, on rising from the bait, fly upwards, pass through the hole in the lower glass, and are trapped in the space between it and the upper one. The glass "fly-catchers," now coming into use, effect the capture of Wasps in a similar way, and deserve a trial by any one troubled with an abundance of the insects. The situations of the nests determine the most likely methods

Wasps—*continued.*

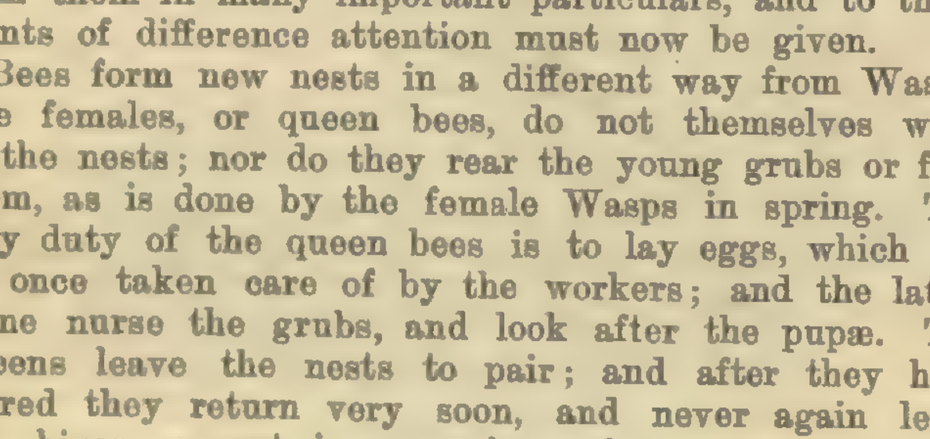
to insure their destruction. The Wasps do not work at night, hence that time should be chosen for operations against them. Nests in holes may be destroyed by means of squibs of mealed gunpowder and sulphur. One of these should be pushed through a piece of turf about a foot square, and two or three inches thick; the squib should be lighted, and put into the Wasps' burrow, and the turf closely pressed down to keep in the smoke. Wet mud plastered round the turf helps in this object; and some of the mud should be placed over the hole when the squib is driven out by the final explosion. A more difficult method is to flood the nest with hot water. Tree Wasps' nests can best be destroyed by placing a pail of water underneath at night, and cutting the support of the nest, so as to allow the nest and its occupants to fall into the water. The pail should have a lid, in case any of the Wasps should climb out of the water. Such nests may also be smoked with sulphur, but with less certain results.

In the article on the **Honey Bee** (*Apis mellifica*), the promise was made that the habits of that insect should be treated of in connection with those of Wasps, with which the former insect agrees in many particulars. Some of the leading features of agreement and of difference between them are, therefore, here briefly indicated.

Like the social Wasps, the honey bees live in large societies, including workers (or neuters), females (or queens), and males (or drones), and form their nests in holes when in the wild state. Bees in domestication live in hives; but not infrequently a swarm, on leaving the parent hive, will select a hole for themselves, from which it is often very difficult to dislodge them. But though Bees agree with Wasps in these respects, they differ from them in many important particulars, and to these points of difference attention must now be given.

Bees form new nests in a different way from Wasps. The females, or queen bees, do not themselves work at the nests; nor do they rear the young grubs or feed them, as is done by the female Wasps in spring. The only duty of the queen bees is to lay eggs, which are at once taken care of by the workers; and the latter alone nurse the grubs, and look after the pupæ. The queens leave the nests to pair; and after they have paired they return very soon, and never again leave the hives, except in swarming, when one queen goes with each new colony. At all other times they remain inside, surrounded by a multitude of workers, which feed their queen, and follow her as she deposits her eggs in the cells prepared for them. Each new nest of honey bees is thus not the work of a single female, but is formed by a colony or swarm from some older nest, the bees in which have become too numerous to remain at home with advantage to the commonwealth. Each swarm consists of a queen and a number of workers.

Among Wasps there is, comparatively, little difference between workers, females, or males; but among honey



Worker. Queen. Drone.

FIG. 215. HONEY BEES.

bees the differences are evident. Fig. 215 shows that they differ in size and form of body; and also that the eyes of the male are so large as to meet on the top

Wasps—*continued.*

of the head; while in the females and neuters the eyes are entirely lateral. The males, or drones, take no part in the work of the hive. They are produced from eggs laid usually in April or May, and assume their perfect condition in summer. They fly during the warmest part of the day, and pair with the newly-emerged queens during flight. If the impregnation of a queen is retarded till twenty-eight days after hatching, she lays only male eggs. In hives where the queen is laying eggs from which workers can be reared (*i.e.*, if impregnation has not been long delayed after she reached maturity), it has been observed that the workers, towards the beginning of autumn, attack the drones, and kill them by stinging them. Where the queen is capable of laying only male eggs, and also when the queen has died, or has been removed from the hive, the males are not killed till a fertile queen has been secured. There is only one queen bee in each hive; but if she is lost, the workers proceed to rear others from worker-larvæ, by enlarging their cells and supplying them with abundance of food. This treatment causes the earlier stages to be passed through in a shorter time, and also produces a marked result in modifying the bodily structure—the bees produced being true females, with all the physical peculiarities that distinguish the latter from the workers. When it is necessary to replace a queen, there are usually from twelve to twenty larvæ reared for the purpose. As soon as the first queen that reaches maturity is able, she goes round the cells containing the others, still in the state of pupæ, and gnaws a hole in each cell. If the cell contains a queen ready to emerge, the latter is stung by her older rival. The workers pull the pupæ or dead bodies of the queens from the cells, and remove them. Should two queens emerge at the same time, it has been observed that one kills the other. So, also, when a stranger queen is introduced into a nest, she and the rightful queen fight till one is killed.

At the periods of swarming, the workers prevent the slaughter of as many young queens as are required for the nest and the swarms. The old queen leads off the first swarm; and the young females that are to go with new swarms are not permitted to emerge from their cells till the swarms are ready to depart. Thus fatal contests are prevented among them.

The workers differ from the queens as follows: They are smaller; the jaws, or mandibles, are more prominent; the maxillæ and tongue are longer, and the upper lip and antennæ are black (in the queens the upper lip is fulvous, and the antennæ are pitchy-brown); the legs are black, with the tarsi brownish; the basal joints of the tarsi, and the tibiæ of the hinder legs, are broader, and hollowed externally, and bear stiff hairs on the sides and across them, so placed as to form a receptacle in which to carry the pollen, or "bee-bread," collected from flowers for the nourishment of the bees and of the larvæ; the abdomen is broader and less pointed, and the three middle segments bear a small wax-pocket on each side near the base. These differences are very considerable; yet the facts that the larvæ of workers can be made by special treatment to produce queens, and that the workers possess (functionless) representatives of ovaries, show that they are indeed females in which the reproductive organs have remained undeveloped, and which are fitted to perform special duties for the good of the community. The workers do all the work of the hive: they build the cells, collect the honey, pollen, and a resinous substance known as "propolis," and feed and attend to the young. These operations are so varied that they are divided between two classes of workers, of which one prepares the wax, and the other attends more especially to building it into cells, collecting the food, and rearing the young.

The makers of wax eat some sugar or honey; and a number of them cling together, in a cluster of festoons,

Wasps—*continued.*

for about twenty-four hours, without active movement. During this time, the wax is formed in thin plates, one in each of the little pockets mentioned above as occurring on the three middle segments of the abdomen. When the wax is formed, the bee detaches the plates from the pockets, and chews them up, mixed with a liquid from the mouth, into a riband, which is deposited on the place where it is to be made into cells. After the wax-makers have deposited the materials, the other class of workers build it up into the cell walls, making the cells larger or smaller, as required for the females, males, and workers. The edges of the cells are finished with a kind of adhesive varnish, which melts less easily than wax, and is redder in colour. This is the "propolis," which the bees collect from the bud-scales of Horse Chestnuts, Poplars, and other trees possessed of sticky buds. Attention has frequently been called by zoologists and mathematicians to the regularity of form and of size in the cells, and also to the fact that their form secures the greatest possible inclosed space with the smallest possible expenditure of wax.

Many of the cells are occupied by larvæ or pupæ; but others are employed as storehouses for the honey, and often the cells from which young bees have emerged are cleared out and filled with honey. The visits made by bees to flowers, in the course of which they are of so great use in effecting pollination in many plants, have as their object the collection of nectar and of pollen. (*see* **Nectar, Nectary, Orchid Fertilisation,** and **Pollination**). The bees swallow the nectar, and continue their visits to flowers till the stomach, or honey-bag, is filled with the sweet fluid. They then collect the pollen, forming little masses of the grains brushed off their bodies; they place them upon the hairy, flattened portions of the hind legs, and they thus form a load of food to be carried back to the hive. In the stomach the nectar undergoes a change by which it is converted into honey, and this is either given at once by the collectors to those bees that have been at work in the hive, as food, or is poured into the cells. Those which contain honey that is soon to be used are not closed; but such as are reserved for food during winter are covered with wax. The pollen is either eaten by the bees themselves, or is given to those that have been at work in the nest, or to the larvæ, or it is stored away in cells for future use. On these stores the bees subsist during winter; hence the nests are not broken up on the approach of cold weather: nor do the bees resemble Wasps in destroying their larvæ in autumn, as they can provide them with food. When the honey is taken from hive bees, it is necessary to supply them with sugar and water, or with other sugary substances, from which they can prepare honey.

It may be mentioned, in conclusion, that there are several kinds of bees in domestication, of which *A. mellifica* is the commonest, and has been specially kept in view above; the other species differ only from it in minor details.

WATER. Water is so indispensable to the very existence of plants, that its use and modes of action deserve to be more fully understood than they are by many gardeners. It is made up of a combination of two gases, Oxygen and Hydrogen, in the proportion of sixteen (by weight) of the former to two of the latter. By volume, the proportion is one of Oxygen to two of Hydrogen, the chemical formula being H_2O. The properties of Water are, for the most part, so well known as to render it needless to dwell upon them. When pure, it has neither colour, taste, nor smell; nor does it leave any solid matter when it is allowed to evaporate by heat or by exposure to the atmosphere. That Water is converted into ice, and rain into snow, at a low temperature (32deg. Fahr.), is a fact familiar to everyone in such a climate as ours. While it is freezing, the

Water—*continued.*

Water frees itself from by far the greater part of mineral substances that may be dissolved in it; so that ice consists of almost pure Water, even when formed from the salt Water of the sea. Pure Water has the power of dissolving many mineral substances and gases in greater or less amount, the greatest quantity of any particular substance or gas that it can dissolve varying with its temperature. The solutions thus formed are of very great importance in horticulture, since it is in this form that plants absorb the elements found in their ash, and which are mostly essential to their support. These solutions of minerals in the soil are almost always extremely dilute. In such weak solutions minerals can be absorbed with much greater readiness by the root-hairs of plants than they could be were the solutions stronger, so that they are well suited to supply the requirements of plants. Some minerals—*e.g.*, Carbonate of Lime (whether in the form of marble or of chalk)—are scarcely, if at all, soluble in pure Water; but they become dissolved in water which has Carbonic Acid Gas already dissolved in it. Probably, no natural Waters are wholly deficient in this gas, and they can dissolve small quantities of even marble or Phosphates of Lime. The roots of plants can themselves also dissolve these minerals when in close contact with them. In all cases, the minerals necessary for the nutrition of the plants pass into them from the soil in these weak solutions. There is a constant passage of the fluids into the roots, and thence into the leaves, in order to replace the Water that is at all times escaping from all the green parts into the air in the form of invisible vapour.

The amount and nature of the water-supply for a garden is a matter of very great consequence; and it is necessary to inquire a little into the various natural sources from which it can be obtained, and the relative merits of the Water from each. The sources may be grouped under (1) rain, (2) ponds and streams, and (3) springs. Though it is impossible to draw sharply-defined distinctions between the Waters from these sources, yet they differ in several respects.

Rain is, in a sense, the source from which all Waters are derived, and from which all streams are fed; but the term Rain-water, in the ordinary sense, is restricted to that collected from the atmosphere—usually off the roofs of houses—and carried into a tank, in which it is stored till required. Pure Rain-water may contain a small quantity of Nitrates and Ammonia, which it dissolves out of the atmosphere, and carries with it to the earth. But, owing to the dust and impurities on the roofs or other surfaces from which it is usually collected, it always has also an appreciable, though very small, amount of various mineral substances dissolved in it; and is thus able to supply to plants at least a part of the mineral food that they require. It is fitted also to dissolve from the soil in which plants grow such substances as Carbonate of Lime, as it almost always contains a good deal of Carbonic Acid Gas, and also some Oxygen, dissolved while falling through the atmosphere. It is heated to the same average temperature as the air, so that in summer it helps to warm the soil to that temperature; and it thus stimulates the growth and power of absorption of the roots, and fits them to supply Water to the plants as quickly as it evaporates from the leaves. Rain-water is preferred for watering plants on account of its temperature being nearly the same as the air, and of the gases dissolved in it.

The Water in streams and in ponds contains a larger proportion of mineral substances than occurs in pure Rain-water, the gases are often present, only in smaller amount, and the average temperature — except in very shallow streams and ponds—is usually lower than that of the air in summer; and this is especially the case with Water conveyed from a distance in underground pipes.

Spring Water resembles that from streams in the amount

Water—*continued.*

of mineral substances in it; or it may even contain these substances in such amount that some of them, especially Carbonate of Lime, may be deposited in a crust on any bodies in the water, owing to evaporation of Carbonic Acid Gas from it, rendering it no longer able to keep them dissolved. Petrifying springs are of this nature. Some springs give Water that is actually injurious, as it contains compounds of Iron, or other substances that are poisonous to plants if present in more than very small amount. The Water from ordinary springs is almost always a good deal colder than the air in summer. If Water from streams, ponds, or springs is to be used in watering plants, it should be kept for some time previously in a tank small enough to allow of its being warmed to the ordinary temperature of the air in summer.

The amount of Water usually present in any soil has a very important influence on its fertility. Light soils with open, sandy subsoil are apt to suffer from want of Water; and a moderate drought may prove very prejudicial, or even fatal, to the plants cultivated in such. On the other hand, clays (and, in a less degree, other soils), over a close, impervious subsoil, retain Water too strongly, so that it stagnates; or they may allow the rain to run off the surface, and, if shallow, may actually suffer from want of Water during continued droughts, after the supply in the surface soil has evaporated. Light soils are much benefited by careful irrigation. Stiff soils, on the contrary, are usually in need of well-considered drainage. The latter operation is of wider utility than is recognised by many agriculturists. That it removes superfluous Water is obvious, and it is admitted by all that stagnant Water in the soil is hurtful to most plants, and in more ways than one. It promotes the formation, from decaying organic remains in the soil, of substances prejudicial to many plants; and where such substances are abundant, only certain weeds will grow. Waterlogged soils are deficient in the Oxygen that is required by roots to permit of the healthy discharge of their functions; the roots are unable to exist under the conditions present a few inches below the surface, or to penetrate deeply; the plants therefore are ill-nourished, as the roots spread less than in more open soils, and they derive their mineral food only from a limited area below the surface. In case of severe drought, the Water may all evaporate down to the depth reached by the roots, while the stiff subsoil prevents the passage of Water from below to take its place; and the plants cultivated on waterlogged land may thus die for lack of Water. Moreover, waterlogged soil is always considerably colder than the average temperature of the air, owing to the heat lost by the constant evaporation of Water from its surface. The crops cultivated on it are thus rendered backward in their growth, and may not reach maturity till a week, or even a fortnight, after those on well-drained soils. All this is changed when drains are well placed and well made, and the impervious subsoil is broken up. The rain no longer runs off the surface, nor does Water stagnate in the soil: it sinks into the subsoil, and there forms a reserve from which the surface soil can obtain supplies as required by the plants in it. The rain, while falling, becomes heated to the temperature of the air, or nearly so, and is thus able to warm the soil in sinking through it, and to supply the roots with Water at nearly the same temperature as the air — a condition most favourable to the due performance of the vital functions, and rapid and healthy growth in plants. Free evaporation from the soil is checked; and, this cause of coldness being removed, the crops are found to ripen earlier. As the rain sinks into the soil, the air follows into the interspaces vacated by the Water: thus the roots are supplied with the gases they require, and, as a result of this, and of the absence of the injurious organic substances formed in

Water—*continued.*

stagnant Water, they penetrate deep into the subsoils, beyond the reach of ordinary droughts. In this way they, at the same time, obtain a more reliable source of Water, and draw their food from a wider area.

The means by which Water enters plants, to form the crude sap, the changes that this undergoes, and the channels by which it is conveyed through the tissues, are treated of elsewhere in this work. *See* **Sap, Vascular System,** and **Vessels.**

WATER ALOE. A common name for **Stratiotes aloides** (which *see*).

WATER ANEMONE. A common name for **Ranunculus aquatilis** (which *see*).

WATER ARCHER. A common name for **Sagittaria sagittifolia** (which *see*).

WATER ASH, CAROLINA. *See* **Fraxinus platycarpa.**

WATER AVENS. *See* **Geum rivale.**

WATER BALSAM. *See* **Tytonia natans.**

WATER BEAN. *See* **Nelumbium.**

WATER BETONY. *See* **Scrophularia aquatica.**

WATER CALTROPS. *See* **Trapa natans.**

WATER CRESS. *See* **Cress, Water.**

WATER ELDER. *See* **Viburnum Opulus.**

WATERFALL. *See* **Cascade.**

WATER FLAG. *See* **Iris Pseudo-acorus.**

WATER GLADIOLE. A common name for **Butomus umbellatus** (which *see*).

WATERING. One of the most important operations in connection with the cultivation of plants, particularly those which are grown in pots and planted out in glass structures. It is an operation in daily practice at all seasons, and one which often requires the exercise of much judgment and care on the part of the operator. There are numerous subjects that may easily be injured, or even killed, by receiving either too much water, or an insufficient supply, and there are very few plants which do not suffer more or less by being watered indiscriminately at fixed periods, as their condition must vary according to the amount of evaporation which is taking place, and the quantity of roots that are absorbing the moisture supplied. It is not possible to do more than refer to Watering in somewhat general terms, as individual plants have often to receive special attention in regard to it, and different species in a genus also sometimes require totally different treatment in the matter of watering. As a rule, soft-wooded plants, and all those of quick growth, require more water than others of a slow-growing or hard-wooded nature; but exceptions may not unfrequently be found. Seasons of growth and of rest have also to be dealt with, and the supply of water given accordingly. Soft rain-water is always the best for plants of every description; provision should, therefore, be made for collecting and preserving as much as possible for future use from the roofs of glass and other structures. Water should not be applied to plants at a lower temperature than that to which they are at the time subjected; particularly does this remark apply to such as are grown in heat, or are being subjected to forcing under glass. Even upon plants established in the open ground, cold water has an injurious effect during summer time if applied direct from springs or wells; it becomes efficiently warmed in large, open tanks, streams, &c., exposed to the sun and air, hence one of these sources is most desirable.

Plants in pots, when they require Watering, should be well soaked, not slightly damped; it may not, in every

Watering—*continued.*

instance, be necessary to keep Watering daily, but surface sprinklings are always to be avoided. The amount of water and the frequency of its application are matters which can only be known from personal experience in dealing with various subjects under cultivation: some require it, in summer, two or three times a day, while others would be ruined were they similarly treated. The time when water is likely to be needed should be anticipated somewhat, so as to avoid having to give it more than is really necessary during sunshine in the middle part of a hot day. In summer, Watering should be proceeded with early in the morning if it is known that the plants will require a supply before the afternoon, the general Watering being given when it is nearly time to reduce the air for the day. Should it become necessary to water in the day-time, a supply should be procured of a temperature equally warm to that in which the plants are growing. Occasionally, a specimen will get overlooked, and will show signs of flagging; it should then be stood in a pail of water until well soaked, and kept shaded for the remainder of the day. In winter, it is generally very desirable to have the foliage of most plants dry at night. Watering is, therefore, best done in the morning only; not that it is always necessary to wet the foliage, but because of the moisture that must be caused by waste on the stages, &c.

The necessity for Watering trees, shrubs, &c., outside, of course depends on the seasons and other circumstances, such as recent transplanting, &c. Whenever the operation becomes necessary, it is always best to give copious supplies, and then to mulch the surface with some dry, light material, as this tends to prevent undue evaporation. This method of management is also applicable in summer to fruit-trees, and, indeed, crops of any kind, indoors or out, that are planted in the ground, and require plentiful supplies of water at the roots.

WATERING-POTS. These, in various sizes, are requisite where there are many kinds of plants to be kept watered. For trees of all kinds, shrubs, outside garden crops, &c., the ordinary kind, with coarse rose, is well adapted, but the use of the rose is not always necessary. A pot holding from twelve to sixteen quarts is quite large enough for carrying and managing when full; the latter capacity being an extreme limit. Pots of smaller sizes are necessary for watering indoor plants, and these are better managed when the spouts are made longer in proportion than in the larger sizes. Sizes each holding two, three, four, five, and six quarts of water are adapted for use with long spouts; these prove most serviceable where plants have to be reached at a considerable distance from the person who is watering. It is sometimes an advantage to have the end of the spout bent downwards, at about a right angle, where the rose is fixed, as the water runs without lifting the can up so high. For watering beds, pots, or pans, where small seeds have been sown, a very fine rose is necessary, and it should fit the spout so that all drip is prevented: this is best insured by having the rose made of brass, so that it can be readily screwed on or taken off as desired. If the same thread is used, several roses, perforated to various degrees of fineness to suit the plants or seeds that are watered, can be employed for screwing on a can. Watering-pots specially intended for Strawberries in spring are not furnished with a cross handle over the top; they hold about two quarts of water, and are provided with long spouts for the purpose of watering the plants referred to, when situated rather closely together, and on shelves near the glass. Watering-pots are usually either japanned, painted red or green, or galvanised in a similar way to ordinary cisterns. If the whole surface is properly galvanised inside and out, there is no danger of rusting, and Watering-pots made of galvanised iron are very strong and durable.

WATER LEMON. *See* **Passiflora laurifolia.**

WATER LENTILS. A common name for **Lemna** (which *see*).

WATER LETTUCE. *See* **Pistia Stratiotes.**

WATER LILY. A common name for various species of *Euryale*, *Nuphar*, *Nymphæa*, *Victoria*, and *Villarsia*.

WATER MELON. *See* **Citrullus vulgaris.**

WATER MILFOIL. *See* **Myriophyllum.**

WATER OAK. *See* **Quercus aquatica.**

WATER PARSNIP. *See* **Sium.**

WATER PLANTS. A general term applied to all plants which grow in water, both in and outdoors. Perhaps the most familiar of all are Nuphars and Nymphæas. With these the following, amongst many others, may be associated, but some require a greater depth of water than others: *Acorus Calamus*, *Alisma Plantago*, *Aponogeton distachyon*, *Butomus umbellatus*, *Calla palustris*, *Hottonia palustris*, *Limnanthemum nymphæoides*, *Pontederia cordata*, Sagittarias, *Stratiotes aloides*, *Trapa natans*, *Typha angustifolia* and *T. latifolia*, and *Vallisneria spiralis* (indoors).

WATER SOLDIER. *See* **Stratiotes aloides.**

WATER SPIKE. An old name for *Potamogeton*.

WATER THYME. *See* **Elodea.**

WATER VIOLET. *See* **Hottonia palustris.**

WATER WHITE OAK. *See* **Quercus lyrata.**

WATSONIA (named after W. Watson, 1715-1787, Professor of Botany at Chelsea). Bugle Lily. SYNS. *Meriana*, *Neuberia*. ORD. *Irideæ*. A genus comprising according to Klatt twenty-five, according to Baker eleven, species of greenhouse, bulbous plants, confined to South Africa. Flowers one to a spathe, sessile; perianth tube curved or recurved, the lobes sub-equal, ovate, oblong, or lanceolate; stamens affixed within the throat; filaments free, filiform, rather long; spathes lanceolate, oblong, or narrow, often numerous, scattered or somewhat imbricated; spikes long, simple or slightly branched. Leaves long, ensiform, rather rigid, veined, the midrib usually prominent. Stem frequently tall. Watsonias are very pretty subjects when in flower. They require a mixture of very sandy loam and a little peat. If planted out in a pit or frame, where protection from frost can be ensured, they will flower much stronger than if kept in pots. Little or no water should be given during the resting season. Propagation may be effected by offsets, or by seeds.

W. aletroides (Aletris-like). *fl.* seven to twelve crowded in a spike, drooping; perianth scarlet, the tube 1in. long, the segments acute, ¼in. long; spathes ten lines long; scape terete, simple, leafy, 1ft. to 2ft. high. June. *l.* linear-ensiform, thick, acute, shorter than the scape, ½in. broad, margined and ribbed with yellow. 1774. (B. M. 533.) SYN. *Antholyza Merianella* (B. M. 441).

W. angusta (narrow). *fl.* eight to twenty-four, densely imbricate-spicate, distichous; perianth brilliant scarlet, 2in. long, the segments oval-oblong, much spreading; spathes purple, scarious, seven lines long; scape simple or branched, erect, terete, spathiform-leafy. June. *l.* distichous, lanceolate-ensiform, acute, 1in. broad, much striated. 1825. SYNS. *W. iridifolia fulgens* (B. M. 600; F. d. S. 1077), *Antholyza fulgens* (A. B. R. 192).

W. brevifolia (short-leaved). *fl.* eight to fifteen, imbricate-spicate, distichous or secund; perianth scarlet, 1in. long, the tube twisted, curved, the segments regularly spreading, mucronate; spathes unequal-valved, the inner valves bifid at apex; scape erect, simple, 9in. to 15in. high. May. *l.*, cauline ones spathe-like; radical ones broadly or narrowly linear-ensiform, distichous, cuspidate, ribbed and margined, two to seven lines broad. 1794. (B. M. 601.) SYN. *Antholyza spicata* (A. B. R. 56).

W. densiflora (dense-flowered).* *fl.* in a dense, distichous spike; perianth rose-red, the tube 1½in. long, the spreading, lanceolate, acute segments ½in. to ¾in. long; scape as long as the leaves, covered with numerous reduced leaves. June. *l.* erect, linear,

Watsonia—*continued.*

rigid, 1½ft. to 2ft. long, ½in. broad, with several strong ribs, and a thickened, straw-coloured margin. 1879. A fine, well-marked species. (B. M. 6400.)

W. humilis (dwarf). *fl.* five in a distichous spike; perianth rose-coloured, 2in. long, the segments regular, oblong-ovate, acute; spathes equal-valved, equalling the perianth tube; scape simple, terete-angled, 8in. to 12in. high. June. *l.* lanceolate-ensiform, straight, acute, ribbed and margined, distichous, shorter than the scape, one to two lines broad. 1754. (B. M. 631.)

W. iridifolia fulgens (Iris-leaved, brilliant). A synonym of *W. angusta.*

W. marginata (conspicuous-margined). *fl.* ten, slightly imbricated, distichous, nodding; perianth pink, 1¼in. long, the segments obovate-elliptic, mucronate; spathes nearly equal-valved, ¾in. long; spikes several; scape terete, simple, nearly 2ft. high. July. *l.* lanceolate-ensiform, slightly coriaceous, thickly ribbed and margined, cuspidate, shorter than the scape, ¼in. broad, glaucescent. (B. M. 608.)

W. m. minor (lesser). *fl.* of a beautiful pink; spike solitary. *l.* rather dark green, lucid, obscurely cartilaginous on the margins. (B. M. 1530.)

W. Meriana (Madam Merian's).* *fl.* three to nine, distichous; perianth purple or scarlet, somewhat salver-shaped, the throat cucullate-cylindrical, 1in. long, the segments obovate-oblong, acuminate, 1in. long; outer spathe valves purple, striated, 1¼in. long, the inner ones bifid, 1½in. long; scape terete-angled, striated, simple or branched, 9in. to 2ft. high. May. *l.* lanceolate-ensiform, thick, much striated, margined, acute, two to six lines broad. 1750. SYN. *Antholyza Meriana* (B. M. 418).

W. M. coccinea (scarlet). *fl.* five to eight; perianth scarlet, 2½in. long; scape 1ft. to 2ft. or more high. A splendid variety. (B. M. 1194.)

W. M. iridifolia (Iris-leaved). *fl.*, perianth white, funnel-shaped, eleven lines long; scape 3ft. high. *l.* broadly lanceolate-ensiform, acute, shorter than the scape, 1¼in. broad.

W. M. roseo-alba (pink and white). *fl.* twenty-four, densely imbricate-spicate; perianth pink and white, 2¼in. long; scape 2ft. to 3ft. high. *l.* broadly linear-ensiform, 1¾in. wide, shorter than the scape. (B. M. 537 and 1193, under names of *W. roseo-alba* and var.)

W. punctata (dotted). *fl.*, perianth scarlet or violet, funnel-shaped, 1¼in. long, the tube erect, filiform, the segments ovate-lanceolate, lined; outer spathe valves ferruginous, ½in. broad, the inner ones bifid, ¼in. broad; scape terete, erect, 4in. to 15in. high. June. *l.* three, linear-compressed or terete, slightly furrowed, sheathing at base. 1800. SYN. *Ixia punctata* (A. B. R. 177)

W. rosea (rose-coloured).* *fl.* crowded in a paniculate, elongated-pyramidal spike; perianth rose-coloured, sub-campanulate, nearly 2in. long, the throat broadly turbinate, the segments mucronate; spathes purple, five lines long; scape terete, simple or branched, nearly 2ft. high. July. *l.* broadly lanceolate-ensiform, 1in. broad, cartilaginous-margined, striated, acute. 1803. (B. M. 1072.) SYN. *Gladiolus pyramidatus* (A. B. R. 335).

W. strictiflora (straight-flowered). *fl.* scentless; perianth cherry red, about 3in. long, the tube quite straight, the opening of the throat marked with a violet-purple star of six rays; scape taller than the leaves, simple. June. *l.* linear-ensiform, rather rigid, 4in. to 6in. long, about ½in. broad. Bulb the size of a large nutmeg. 1810. (B. M. 1406.)

WATTLE. A name applied to various species of *Acacia* and *Citharexylum.*

WAX DAMMAR. A common name for **Podocarpus neriifolia** (which *see*).

WAX FLOWER. *See* **Hoya.**

WAX FLOWER, CLUSTERED. *See* **Stephanotis floribunda.**

WAX, GRAFTING. *See* **Grafting Wax.**

WAX MYRTLE. A common name for **Myrica cerifera** (which *see*).

WAX PALM (of Brazil). *See* **Copernicia cerifera.**

WAX-PLANT. A common name for **Cerinthe major** (which *see*).

WAX-TREE. A common name for **Vismia guianensis** (which *see*).

WAY BREAD. An old name for *Plantago.*

WAYFARING-TREE. *See* **Viburnum Lantana.**

WEASEL (*Mustela vulgaris*). Many persons regard Weasels as noxious animals that should be killed on every possible opportunity; but they are most valuable in gardens by destroying all kinds of mice. The latter are often very hurtful, as they eat peas and other seeds, and gnaw the bark or the roots of choice trees and shrubs. Hence Weasels deserve protection in gardens, although it cannot be denied that they are occasionally destructive where fowls are kept.

WEATHER. The relation of the Weather to gardening, and its effect upon garden crops, are matters often too well known, especially when the results are unsatisfactory. Still, it is important for gardeners to be continually studying the subject, with a view to adapting themselves to circumstances by taking advantage of every help which the Weather affords, and at the same time using precautions, so far as possible, for preventing it from doing injury. Those who would manage gardens successfully must always be looking ahead, and anticipating what is likely to come later on, as well as directing their attention to making provision for the present. Thus, what is likely to occur during the day needs consideration in the morning, and provision for the night must invariably be made the previous evening. The Weather affects outside vegetation and crops according to locality and the nature of soil and subsoil. Where the latter is gravelly, the effects of drought are most readily felt, while a clayey subsoil has naturally a tendency to hold more moisture, and is, consequently, not favoured by very wet seasons. In regard to the important work of transplanting of any kind, the state of the Weather must be the first consideration, coupled with the proper season for performing the work. Very dry Weather is always unfavourable for any transplanting. Watering may be ever so well attended to, yet if there is a constant and rapid evaporation taking place its effects are not much marked. Mild, moist Weather should therefore be selected for this work; it must even be waited for a long time in some seasons before crops can be transplanted and safely re-established. Due advantage should be taken of frosty Weather, when the ground is hard, for executing such work as wheeling manure, &c., into places that cannot be well reached when walks and the ground are loose. In snowy Weather, when outside work has often to be suspended, everything that can be forwarded in sheds should receive full attention. Digging should not be proceeded with while the ground is frosty, neither should snow be buried by the same operation. In garden management, the work must, to a certain extent, be arranged each day according as the Weather allows; the seasons too, which are very variable, will need to be studied, and work managed according as circumstances depending on these, and the changes of Weather, will admit. In the management of glass structures and pot plants generally, attention to the changeableness of the weather is of much more importance than to plants, &c., outside. A properly-constructed glasshouse will quickly be affected by a rise or fall of temperature caused by the Weather outside; and as the inside occupants are frequently very tender, and incapable of bearing with impunity what hardier subjects outside can withstand, the conditions necessary for their well-being have to receive constant and daily attention. The chief point to be impressed is that of adopting a system of management which shall utilise every opportunity of forwarding operations, so far as may be practicable, be the climatic conditions whatever they may. To do everything at the proper time, is equally important in this as in all other matters. In gardening, it can only be effected by a considerable amount of forethought on the part of those in charge, coupled with practical experience, to know what cultivated plants require, and by daily attention, which has to be constantly varied to meet exigencies caused by an ever-changing climate.

WEBBIA. Included under **Vernonia** (which *see*).

WEBERA (named in honour of George Henry Weber, 1752-1828, Professor at Kiel, and author of various Floras). SYNS. *Ceriscus*, *Chomelia* (of Linnæus), *Stylocoryne* (of Wight and Arnott), *Tarenna*, *Wahlenbergia* (of Blume). ORD. *Rubiaceæ*. A genus comprising about forty species of stove trees and shrubs, inhabiting tropical Asia, Polynesia, Africa, and (one species) Australia. Flowers in terminal, corymbiform cymes, sessile and bibracteolate at the ovary, or pedicellate and bracteolate on the pedicel; calyx tube ovoid or turbinate, the limb five, rarely four, cleft or parted; corolla funnel- or salver-shaped, with five, rarely four, narrow, spreading or reflexed lobes, twisted in bud; stamens five, rarely four, on the mouth of the corolla; filaments short or wanting. Leaves opposite, petiolate, often oblong-lanceolate; stipules triangular-ovate, usually deciduous. Only one species calls for description here. For culture, *see* **Vangueria.**

W. corymbosa (corymbose). *fl.* white, faintly odorous; corolla ⅓in. to ¾in. in diameter, the tube broad, about equalling the lobes; cymes variable in size. Summer. *l.* elliptic- or oblong-lanceolate, acute or acuminate, 3in. to 8in. long, shining above, often glaucous beneath; petioles short, stout. India. A glabrous shrub or small tree. (B. R. 119.)

WEB-FORMING CATERPILLARS. Almost all the Caterpillars of Butterflies, Moths, and Sawflies can spin silken threads when required; but many of them hardly do so except to form a cocoon, for the protection of the pupæ; while many do not even spin a cocoon. Many larvæ spin together several leaves to form a protection for themselves against birds or other foes, or they draw a leaf into a tubular form, with the same object, keeping it in position by silken threads. The Web-formers are not very numerous, though they belong to widely different groups of *Lepidoptera*. Several of them live on Hawthorn leaves, such as the Black-veined White Butterfly (*Aporia Cratægi*), the small Ermine Moths (*Hyponomeuta padella*, &c.), and Sawflies of the genus *Lyda* (*e.g.*, *L. punctata*). The larvæ of these insects, when young (or during their whole life as larvæ), live in webs spun by a number of them in common, sometimes over a whole branch, but usually over several leaves. Some form separate silken tubes for themselves inside the webs; others are contented with the protection afforded by the web alone. An account of the several insects just mentioned is given under the heading **Hawthorn Caterpillars.**

The larvæ of various European and exotic Moths form much more striking and conspicuous webs than do the British species—*e.g.*, the Processionary Moth (*Cnethocampa processionea*), which feeds on Oaks in Germany. The larvæ spin a web, on which they lie, and, when going to feed, they march in a regular procession—first one, then two, then three, and so on, those in each line moving side by side, till they reach suitable food, when they disperse and eat what they require, and thereafter return to the web in the same regular order. When full-fed, they spin a compact web, under cover of which they form their separate cocoons to protect themselves while they are pupæ.

Remedies. Web-forming Caterpillars are easily got rid of by tearing down the webs, or cutting off the branches, and destroying the larvæ.

WEDELIA (named in compliment to George Wolfgang Wedel, 1645-1721, a German botanist, Professor at Jena). Including *Wollastonia*. ORD. *Compositæ*. A genus embracing about forty-five species of stove, greenhouse, or hardy, scabrous-pubescent or hirsute, annual or perennial herbs or sub-shrubs, inhabiting the warmer parts of the globe. Flower-heads yellow, pedunculate, at the tips of the branches or in the upper axils, heterogamous; involucral bracts sub-biseriate, the outer three to five usually herbaceous or leafy, the inner dry; receptacle flat or convex, the pales inclosing the florets; ray florets ligulate, entire, or two or three-toothed at apex; disk florets five-toothed or shortly five-cleft; achenes smooth or tubercled. Leaves opposite, often toothed, rarely trifid or entire. The species are mostly interesting from a botanical standpoint only. Those described below thrive in any fairly good soil. *W. hispida* may be increased by seeds or by divisions, and *W. radiosa* by seeds or by cuttings.

Wedelia—*continued.*

W. aurea (golden). A synonym of *Zexmenia aurea*.

W. hispida (hispid). *fl.-heads* one to a peduncle; outer involucral scales hairy, the inner ones nearly glabrous. June. *l.* lanceolate or somewhat obovate-lanceolate, cuneate at base, acuminate at apex, cut-toothed, hairy. Branches erect, hispid. *h.* 1½ft. Mexico, &c., 1819. Half-hardy perennial. (B. R. 543.) SYN. *Zexmenia texana*.

W. radiosa (rayed). *fl.-heads* one to three on peduncles longer than the leaves; involucral scales in three series, the outer ones leafy, the inner membranous. June. *l.* petiolate, ovate- or oblong-lanceolate, acute, serrulated, puberulous. *h.* 2ft. Brazil, 1820. Greenhouse sub-shrub. (B. R. 610.)

WEDGE-GRAFTING. *See* **Grafting.**

WEEDS AND WEEDING. Weeds abound in every direction on cultivated land, and wherever there is any kind of soil in which their roots can receive the least encouragement and support. It is sometimes remarked in reference to a piece of land that "Weeds won't grow on it," and this is readily understood as referring to its uselessness for gardening. The length of time during which the seeds of many common Weeds retain their germinative powers is remarkable when, from the removal of ground, or other causes, they become buried too deep to grow until brought again under the more immediate influence of the atmosphere. The rapidity with which soil newly upturned after a long period becomes covered with Weeds will often come under notice, suggesting the existence of seeds which grow only when placed under suitable conditions. Amongst Weeds that, once established, are only with great difficulty eradicated, are Chickweed, Couch Grass, Dandelions, Groundsel, Plantains, and Thistles. The destruction of all these before their seeds ripen, and the frequent use of the hoe during dry weather, are the best plans of preventing their increase. Hand-weeding is the most effectual mode of eradication where there are tap-roots, as in Dandelions, Plantains, and Thistles. The roots of these plants, if left in the ground, will frequently form new crowns in a short time, and grow again. Hand-weeding is also the most certain plan of keeping walks clean; it should be attended to whenever the surface is moist, and everything pulled up should be burned, or put where the seeds are not likely to ripen and sow themselves. Proper Weeding-knives should always be provided along with other garden tools; the work is more readily executed with these than with old knives of other kinds, that are often made to do service. For destroying on a large scale Weeds in walks, salt may be effectually employed, scattered with the hand over the surface, during dry weather, in summer. Smith's Weed-killer, a preparation specially made for walks, has been highly spoken of. Any "destroyer" of Weeds applied to walks must be kept clear of grass and other living edges, and care must also be taken to avoid stepping from a walk on to the grass at the time when a preparation destructive to plant life is being employed.

WEED-WIND, or **WITH-WIND.** An old name for Bindweed (*Convolvulus*).

WEEPING ARBOR-VITÆ. *See* **Thuya orientalis pendula.**

WEEPING ASH. *See* **Fraxinus excelsior pendula.**

WEEPING BEECH. *See* **Fagus sylvatica pendula.**

WEEPING CHERRY. *See* **Cerasus semperflorens.**

WEEPING ELM. *See* **Ulmus glabra pendula** and **U. montana pendula.**

WEEPING MOUNTAIN ASH. *See* **Pyrus Aucuparia pendula.**

WEEPING OAK. *See* **Quercus pedunculata pendula.**

WEEPING POPLAR. *See* **Populus grandidentata pendula** and **P. Tremula pendula.**

WEEPING RED CEDAR. *See* **Juniperus virginiana pendula.**

WEEPING WILLOW. *See* **Salix babylonica.**

WEEVIL-PLANT. A common name for **Curculigo** (which *see*).

WEEVILS. The popular name for a large division of Beetles, of very great interest to the gardener and the farmer, because of the injury inflicted by many species on garden and field produce. There has been frequent occasion, in the course of this work, to refer to their ravages under various headings, the more important of which are mentioned below. The scientific name of the Weevils is *Rhynchophora* (from the Greek words *rhynchos*, a snout, and *phero*, I carry). This name bears reference to the most characteristic mark of the Weevils, viz., that the head is prolonged and narrowed forwards into a snout, on which the antennæ are placed. The snout, or beak, in many is short and flattened; but in a few (*e.g.*, Nut-Weevil) it is very long, slender, and curved abruptly downwards. The mouth is at the end of the beak. The antennæ are very generally elbowed—*i.e.*, the basal joint is long and slender, and the others are short, and form a row, attached to the tip of the basal joint at an angle with it. Few Weevils of temperate climates are large; most are very small. The body is very often short, rounded, and very hard, less often slender and elongate, or depressed and flattened. Like other Beetles, they undergo a complete metamorphosis, their larvæ being usually white, fleshy, legless grubs, with the head horny, dark, and furnished with strong jaws. Many of them live in the interior of fruits, or of seeds, but others burrow in leaves, or in the wood or pith of twigs, or in galls. The Beetles themselves are frequently destructive, gnawing the leaves, bark, or fruits of garden herbs and shrubs. The habits of the larvæ and of the Beetles are thus so varied, and the injuries done by them so manifold, that it would exceed our limits to enter into the full details here; but information on these points in regard to the more important species will be found under the following headings: **Apple-blossom Weevil, Bean Beetle, Cabbage Gall Weevil, Nut Weevil, Orchestes, Otiorhynchus, Pea** (INSECT PESTS), **Pine-bark Beetle, Pine Weevils, Plum** (INSECT PESTS), **Raspberry** (INSECTS), **Rhynchites, Scolytidæ, Sitona,** and **Turnip-Seed Weevil.**

WEIGELIA (also spelt *Weigela*). This is now regarded, by the authors of the "Genera Plantarum," as synonymous with **Diervilla** (which *see*). The correct

Weigelia—*continued.*

FIG. 216. SEEDLING PLANT OF WEIGELIA (DIERVILLA) ROSEA IN FLOWER.

name of *W. rosea* (see Fig. 216) is *Diervilla rosea*, and *W. rosea monstrosa* (see Fig. 217) is now correctly named *D. rosea monstrosa*.

FIG. 217. WEIGELIA (DIERVILLA) ROSEA MONSTROSA.

WEINMANNIA (named after John William Weinmann, apothecary at Ratisbon, author of "Phytanthozaiconographica," 1737). SYN. *Leiospermum*. ORD. *Saxifrageæ*. A genus embracing about fifty species of stove or greenhouse, glabrous or tomentose trees or shrubs, inhabiting the Malayan Peninsula and Islands, the Mascarene and Pacific Islands, Australia, New Zealand, and tropical and temperate South America. Flowers white, small, fascicled or scattered, disposed in simple, terminal and axillary, erect racemes; calyx tube short, the limb four or five-partite; petals four or five, spathulate or ovate, sessile; stamens eight or ten, inserted with the petals. Leaves opposite, coriaceous, petiolate, simple, trifoliolate, or imparipinnate; leaflets usually glandular-serrated; rachis often winged; stipules variable, deciduous. Branchlets opposite, often terete. A selection of the introduced species is here given. They

Weinmannia—*continued.*

all require stove treatment, and thrive in any light, rich soil. Propagation may be effected by cuttings, inserted in sandy soil, under a glass, in heat.

W. glabra (smooth). *fl.* white; petals rather longer than the calyx segments; pedicels twin, shortly hirsute. January. *l.* highly glabrous on both sides, shortly petiolate, imparipinnate; leaflets three to five pairs, oblong-elliptic, slightly acute at base, the margins serrate or crenate-serrate, sometimes nearly entire. *h.* 6ft. Jamaica, 1815. Shrub.

W. hirta (hairy). *fl.* fascicled-racemose; stamens eight, exserted. May. *l.*, leaflets three or four-jugal, six to ten lines long, elliptic, bluish, serrated above the base, pilose-pubescent chiefly beneath. Branchlets villous-hirsute. *h.* 6ft. or more. Jamaica, 1820. Tree or shrub.

W. ovata (ovate-leaved). *fl.*, fascicles few-flowered, remote; racemes very loose, 3in. long. May. *l.* elliptic-oblong, somewhat obtuse, acute at base, crenate, 2in. to 3in. long, 1in. to 1½in. broad; petioles two to three lines long. *h.* 6ft. Peru, 1824. Glabrous tree.

W. pinnata (pinnate). *fl.* fascicled-racemose; stamens eight, exserted. May. *l.*, leaflets three to seven-jugal, elliptic-oblong, bluish, four to eight lines long, serrated above the base, hispid on the midrib beneath, or glabrescent. Branchlets hirsute with short down. *h.* 6ft. and upwards. Jamaica, 1815. Tree. *W. glabra* is (in part) synonymous with this species.

W. trichosperma (hairy-seeded). *fl.*, raceme loose. May. *l.* pinnate; leaflets many, oblong, acute, toothed, obliquely cuneate at base, naked and shining above, slightly pilose beneath. *h.* 4ft. Valdivia. Shrub.

W. trifoliata (three-leafleted). A synonym of *Platylophus trifoliata.*

WELFIA (named in honour of the Royal Family [Guelph] of Hanover). ORD. *Palmæ.* A small genus (two species) of stove, unarmed Palms, natives of Central America. Flowers pale yellowish-white, rather large; spathes two, deciduous; spadices thick, pendulous. Fruit dark violet, oblong, compressed, 2in. long. Leaves terminal, pinnatisect, on rather flat, short petioles; segments much narrowed at base, entire or cut at apex. *W. regia*, the only species introduced, should be grown in a compost of rich loam and leaf mould, mixed with a little old cow-dung. Propagation may be effected by seeds.

W. regia (royal).* *l.* in the young state divided almost to the base into a pair of oblong, acuminate lobes, having a pretty bronzy tint, borne on slender petioles, at length becoming pinnatisect; margins of the segments recurved at base; adult leaves with numerous unequal, narrow pinnæ, decurrent on the angular rachis, whitish beneath. When fully grown, the stem attains a height of 60ft., and the leaves a length of about 20ft. New Grenada, 1869. (G. C. 1870, 764; F. M. n. s. 60; I. H. n. s. 62.)

WELL. A Well is not a desirable source for procuring water to give plants, as the water is invariably colder than the temperature and the soil in which the roots are situated. If, however, there is no other efficient supply, a quantity should be drawn or pumped up some time previous to being required for use, and meanwhile allowed to stand in an open tank. Well-water is also, as a rule, harder than rain-water, and is, consequently, not so well suited for administering to plants. *See also* **Water.**

WELLINGTONIA. A synonym of **Sequoia** (which *see*).

WELSH NUT. A common name for the **Walnut** (which *see*).

WELSH POPPY. *See* **Meconopsis cambrica.**

WELWITSCHIA (named in honour of Dr. Frederic Welwitsch, 1806-1872, a celebrated botanical traveller). SYN. *Tumboa.* ORD. *Gnetaceæ.* A monotypic genus. The species is one of the most remarkable productions of the vegetable kingdom. It is found growing in arid places in tropical and South-western Africa, where rain rarely falls. The two leaves were at first described as being simply persistent cotyledons enormously developed, but such is not the case; the two cotyledons last for some time, and then the true leaves appear. Although *W. mirabilis* "was

Welwitschia—*continued.*

first made known in Europe by Dr. Welwitsch, it appears to have been first discovered by Mr. C. J. Anderson, an eminent African traveller. This wonderful plant has been introduced into the Royal Gardens, Kew; but we do not know if it yet exists in any other establishment. It will probably prove very difficult to cultivate, on account of the impossibility of imitating the natural conditions under which it flourishes. It appears to us that the most probable method of succeeding with it would be to inclose a space within brick walls to a height of about 3ft. from the earth. This should be filled up, to a height of about 16in. or 18in., with a very light, porous soil, such as a mixture of light, sandy loam and broken bricks, in the proportion of two parts of the former to one of the latter. Above this the space should be filled in with sand and brick rubbish, mixed with a little sandy loam—about a tenth part of the latter, just to help to bind it. If planted in this way, the long, descending roots would penetrate into the lower soil, and derive sufficient nourishment and water from it, as the water would ascend into the lower stratum from the earth by capillary attraction, whilst the upper stratum being dry would prevent the plant from rotting. It should be fully exposed to the sun, and no water given it, though at evening a slight syringing over the leaves and crown would probably be beneficial, as this would in some way approach the dews to which it is subjected in its native country. The temperature should not be allowed to get below 50deg." (N. E. Brown).

W. mirabilis (wonderful). *fl.* solitary, contained within the scales of the young cones; cones scarlet, small, erect, at length oblong, in stout, dichotomously branched cymes, springing from near the insertion of the leaves. *l.* two, from deep grooves in the circumference of the trunk, 6ft. or more in length, quite flat, linear, very leathery, splitting with age into innumerable thongs, that lie curling on the surface of the soil. Trunk obconical, about 2ft. long, rising a few inches only above the soil, with the appearance of a flat, two-lobed, depressed mass, sometimes 14ft. in circumference; when fully grown, it is dark brown, hard, and cracked, like the burnt crust of a loaf of bread; the lower part forming a stout tap-root, buried in the soil, and branching downwards at the end. 1862 and 1878. The plant is said to last a century. (B. M. 5368-9; T. L. S. xxiv. 1-14.)

WENDLANDIA (named in honour of Henry Ludovicus Wendland, 1755-1828, once Curator of the Botanic Garden at Hanover). ORD. *Rubiaceæ.* A genus comprising about sixteen species of stove or greenhouse shrubs or small trees, inhabiting tropical and sub-tropical Asia. Flowers white, pink, or yellow, small, two or three-bracteolate, sessile or pedicellate in terminal, thyrsoid, densely many-flowered panicles; calyx lobes four or five, small; corolla tubular, salver or funnel-shaped, the lobes four or five, imbricated in bud; stamens four or five, between the corolla lobes. Leaves opposite or ternately whorled; stipules entire or bifid. For culture of the two best-known species, *see* **Vangueria.** Both are stove trees.

W. paniculata (panicled). *fl.* as in *W. tinctoria;* panicle ample. July. *l.* opposite, elliptic or elliptic-lanceolate, acuminate, 5in. to 8in. long, rarely narrow-obovate, more or less pubescent beneath; stipules recurved, broad, orbicular or oblong, with rounded tips. *h.* 6ft. India, 1820.

W. tinctoria (dyer's). *fl.* white, sessile, fascicled; panicles large, spreading, pubescent, pilose, or tomentose. July. *l.* opposite, elliptic, ovate, or obovate, 4in. to 8in. long, acuminate, glabrous and often shining above, paler and pubescent or rarely glabrous beneath; stipules erect, large, with a subulate point or a laterally-flattened, rigid appendage. *h.* 6ft. India, 1825.

WENDLANDIA (of Willdenow). A synonym of **Cocculus** (which *see*).

WENSEA. A synonym of **Pogostemon** (which *see*).

WERNERIA (named in honour of A. G. Werner, 1750-1817, Professor of Mineralogy at Friburg). ORD. *Compositæ.* A genus embracing about seventeen species of dwarf, tufted, greenhouse, perennial herbs, natives of the Andes of South America. Flower-heads large or

Werneria—*continued.*

mediocre, heterogamous; involucre broadly campanulate or hemispherical, with one series of bracts; receptacle flat or convex, naked; ray florets pink, yellow, or white, in one series, ligulate; disk yellow; achenes oblong or turbinate. Leaves radical or clustered on the stem, entire or rarely toothed or pinnatisect. Only one species is known to gardeners. It thrives in light soil, and may be increased by division of the roots.

W. frigida (frigid). *fl.-heads* yellow, solitary, shortly pedunculate; involucre about thirteen-cleft, coloured. February. *l.* stellate, imbricated, linear, obtuse. *h.* 9in. Quito, 1828.

WESTERN YEW. *See* **Taxus brevifolia.**

WEST INDIAN COCKSPUR. *See* **Pisonia aculeata.**

WEST INDIAN MUGWORT. *See* **Parthenium Hysterophorus.**

WESTRINGIA (named in honour of J. P. Westring, a physician to the King of Sweden). ORD. *Labiatæ*. A genus comprising about eleven species of greenhouse shrubs, broadly dispersed over extra-tropical Australia. Flowers all axillary or rarely in terminal, leafy heads, with a pair of bracts under the calyx, usually very small and sometimes obsolete; calyx campanulate, five-toothed; corolla with a short tube, usually hairy inside, and a dilated throat, the upper lip erect but flat and broadly two-lobed, the lower one spreading, three-lobed; two upper stamens perfect, the two lower ones sterile. Leaves in whorls of three, four, or rarely more. The best-known species are here described. They thrive in any light, rich soil. Propagation may be readily effected by young cuttings, inserted in sand, under a glass.

W. angustifolia (narrow-leaved). A synonym of *W. rigida*.

W. cinerea (grey). A form of *W. rigida*.

W. Dampieri (Dampier's). *fl.* white, nearly sessile, about the size of those of *W. rosmariniformis*, but the corolla more hirsute. September. *l.* in whorls of four, or very rarely three, on the side branches, linear, much revolute, usually about ½in. long, smooth or scabrous above, often hoary beneath. *h.* several feet. 1803. (B. M. 3308.)

W. eremicola (desert-loving). *fl.* pale blue, rather small, usually distant; calyx hoary; corolla pubescent. June. *l.* usually in whorls of three, narrow-linear, acute or mucronate, rarely above ½in. long. Branches erect, often twiggy, more or less hoary or silky-pubescent. *h.* 3ft. 1823. (B. M. 3438; B. R. 1481, under name of *W. longifolia*.)

W. longifolia (long-leaved). *fl.* lilac, rather small, axillary; corolla pubescent outside, the tube usually exceeding the calyx teeth. Summer. *l.* in whorls of three, narrow-linear, mostly above 1in. long, the margins somewhat revolute or nearly flat. *h.* several feet. 1878.

W. rigida (rigid). *fl.* as in *W. Dampieri*. *l.* mostly in whorls of three, but here and there four, linear, obtuse or mucronate-acute, rigid, with much-revolute margins, usually glabrous above when full-grown, and either smooth and shining or scabrous with minute tubercles, hoary beneath. *h.* 3ft. 1823. SYN. *W. angustifolia*. *W. cinerea* is a more hoary form. (B. M. 3307.)

W. rosmariniformis (Rosemary-like).* Victorian Rosemary. *fl.* pale blue, almost sessile, all axillary; corolla pubescent outside. July. *l.* in whorls of four, oblong-lanceolate to linear, acute or obtuse, ½in. to 1in. long, coriaceous, glabrous and shining above, hoary or silvery-white beneath, the margins recurved or revolute. *h.* several feet. 1791. (A. B. R. 214, under name of *W. rosmarinacea*.)

WEST WIND, FLOWER OF THE. *See* **Zephyranthes.**

WEYMOUTH PINE. *See* **Pinus Strobus.**

WHANGEE OR WANGHEE CANE. *See* **Phyllostachys nigra.**

WHEAT. *See* **Triticum vulgare.**

WHEAT, BUCK. *See* **Fagopyrum esculentum.**

WHEAT, GUINEA OR TURKEY. *See* **Zea Mays.**

WHEELBARROWS. Wheelbarrows are amongst the most essential of garden requisites, and are invariably

Wheelbarrows—*continued.*

in daily use. The common Box-barrow with broad wheel is that in general use, and is best adapted for wheeling soil, rubbish, manure, &c. If wheeling on planks becomes necessary, as is sometimes the case when excavations or new walks are made, the Navvy-barrow is best, as the wheel, being made of iron, does not collect soil to clog it, and the sides are set on an angle outwards to facilitate emptying readily. Flat Barrows of the shape

FIG. 218. FLAT MARKET-GARDEN BARROW.

represented in Fig. 218 are largely employed in market gardens for wheeling baskets of fruit, vegetables, &c., to the sheds. One, at least, of these Barrows is always useful in a garden, for the removal of boxes, hampers, or anything that cannot be readily fitted into an ordinary Wheelbarrow. It may also be employed for wheeling a water-barrel, if the use of one is necessary.

WHIN. *See* **Ulex.**

WHINBERRY. A common name for **Vaccinium Myrtillus** (which *see*).

WHIN, PETTY. *See* **Genista anglica.**

WHIP-GRAFTING. *See* **Grafting.**

WHITE ALDER. *See* **Platylophus trifoliata.**

WHITE ANTS, or **TERMITES.** Fortunately, these are not British insects; but in warm countries, and especially throughout the tropics, they abound, and do great destruction to woodwork of every kind. Only a very few kinds of wood can resist their jaws. At La Rochelle and Bordeaux, on the West coast of France, they have been introduced, and have become so abundant as to force themselves into notice by the mischief they do to the woodwork of the public offices and of dwelling-houses, and also to the public records. The Termites resemble true Ants in living in very large communities, comprising males, females, and neuters. Among the neuters may often be distinguished workers and soldiers, the latter attending only to the defence of the community, while the former do the hard work. In structure the Termites differ greatly from the true Ants, as they belong to the *Neuroptera*, while the true Ants are *Hymenoptera* (*see* **Insects**). Among Termites only the mature males and females are winged. The wings are about twice as long as the body; all four are of nearly equal size, and are provided with a stout front border, or nerve, and a number of slender, indistinct nerves in the other parts of the wings. When not in use they lie flat on the back. The segments of the thorax are distinct; the abdomen is flattened; the head is rather flattened, and has cutting jaws; and the legs are rather short and slender. The neuters have no wings, or have only their rudiments. Some entomologists have regarded them as larvæ and pupæ of the males and females; others believe that they never become sexually mature. The species of Termites are very numerous; those that occur in Europe are named *Termes lucifugus* and *T. ruficollis*. The nests of certain tropical species

White Ants, or Termites—*continued.*

are built of mud on the soil, reach a height of from 10ft. to 15ft., and are so hard as to require a pickaxe to penetrate the outer walls. Other species form nests of clay high up among the branches of trees. They always work under cover of galleries of mud, or in wood, as they hate daylight. When the males and females become winged, they leave the nest, and pair, and soon afterwards the females drop their wings, and are taken back into the nest by the workers. Here each female is inclosed in a clay cell built around her by the workers. Her abdomen grows enormously, becoming filled with eggs, of which a single female can lay as many as 80,000 in twenty-four hours. The eggs are carried away by the workers, and are carefully tended, as among bees and wasps. The number of Termites in a large nest is enormous.

As they are not likely to prove hurtful in England, there is no need to dwell upon any remedies.

WHITE ARUM LILY. *See* **Richardia africana.**

WHITE ASH. *See* **Fraxinus americana.**

WHITE BASSWOOD, AMERICAN. *See* **Tilia heterophylla.**

WHITE BEAM-TREE. *See* **Pyrus Aria.**

WHITE BLADDER FLOWER. *See* **Physianthus albens.**

WHITE BOTHEN, WHITE GOLDES. Old names for *Chrysanthemum Leucanthemum.*

WHITE BOTTLE. A common name for **Silene inflata** (which *see*).

WHITE BUTTERWOOD. *See* **Trichilia spondioides.**

WHITE CEDAR. A common name for *Chamæcyparis. See also* **Thuya gigantea** and **T. occidentalis.**

WHITE CYPRESS. *See* **Taxodium distichum.**

WHITE ELM. *See* **Ulmus americana.**

WHITE ERMINE MOTH. *See* **Spilosoma menthastri.**

WHITEHEADIA (named after its discoverer, the Rev. Henry Whitehead, "to whom I am indebted for many curious plants" [Harvey]). ORD. *Liliaceæ.* A monotypic genus. The species is a greenhouse, bulbous plant. It thrives in any rich soil, and may be propagated by offsets.

W. bifolia (two-leaved). *fl.*, perianth light green, subsessile, solitary, four to five lines long, the segments subequal, slightly spreading above the base; stamens six, slightly exserted; raceme dense, 3in. to 6in. long; scape clavate, 1½ft. long; bracts amplexicaul, 1in. to 1¼in. long. April. *l.* two, opposite, roundish-oblong, glabrous, fleshy-membranous, 6in. to 8in. long, 4in. to 6in. broad, sub-acute or emarginate. Bulb fuscous, 1½in. to 2in. thick. South Africa, 1792. SYNS. *Eucomis bifolia* (B. M. 480), *Melanthium massoniæfolium* (A. B. R. 368).

WHITE-HEART HICKORY. *See* **Carya tomentosa.**

WHITE HELLEBORE. *See* **Veratrum.**

WHITE LIME. *See* **Tilia argentea.**

WHITE PINE. *See* **Pinus flexilis.**

WHITE POTHERB. *See* **Valerianella olitoria.**

WHITE ROOT. An old name for Solomon's Seal (*Polygonatum multiflorum*).

WHITE SAPOTA. A common name for **Casimiroa edulis** (which *see*).

WHITETHORN. A popular name for **Cratægus Oxyacantha** (which *see*).

WHITE-TREE. A common name for **Melaleuca leucadendron** (which *see*).

WHITE WOOD. A name applied to *Liriodendron tulipifera, Tilia americana,* &c.

WHITFIELDIA (named after T. Whitfield, a botanical collector of African plants). ORD. *Acanthaceæ.* A small genus (two species) of ornamental, stove shrubs, natives of tropical Africa. Flowers white or brick-red, shortly pedicellate, solitary in the axils of opposite bracts, disposed in a terminal raceme; calyx five-parted; corolla with five twisted lobes; stamens four, didynamous; bracteoles under the calyx, and sometimes the bracts, coloured. Leaves opposite, entire. Only one of the species has been introduced. For culture, *see* **Barleria.**

W. lateritia (brick-red).* *fl.*, calyx brick-red, ample; corolla orange-red or brick-red, twice as long as the calyx, between campanulate and funnel-shaped; pedicels opposite, drooping. October to March. *l.* opposite, ovate or oblong-ovate, subcoriaceous, evergreen, waved, penniveined. Branches spreading, terete, rather tortuous. *h.* 3ft. 1841. (B. M. 4155; F. d. S. 32.

WHITLAVIA. This is regarded, by the authors of the "Genera Plantarum," as synonymous with **Phacelia** (which *see*). The proper name of *Whitlavia grandiflora* (see Fig. 219) is now *Phacelia Whitlavia.*

FIG. 219. FLOWERING BRANCHES OF WHITLAVIA GRANDIFLORA (PHACELIA WHITLAVIA).

WHITLEYA. Included under **Scopolia** (which *see*).

WHITLOW GRASS. *See* **Draba** and **Paronychia.**

WHITTEN-TREE. A common name for **Viburnum Opulus** (which *see*).

WHITWORT. An old name for Feverfew (*Pyrethrum Parthenium*).

WHORL. A ring of organs all on the same plane.

WHORL FLOWER. A common name for **Morina longifolia** (which *see*).

WHORTLEBERRY. *See* **Vaccinium Myrtillus.** The name is also applied to other species.

WIBORGIA. A synonym of **Viborgia** (which *see*).

WIDDRINGTONIA (named in honour of Captain Widdrington [formerly Cook], who travelled in Spain). African Cypress. ORD. *Coniferæ.* A small genus (three species) of greenhouse shrubs or trees, included, by Bentham and Hooker, under *Callitris;* two are natives of South Africa, and the third is found in Madagascar. Flowers dicecious, or male and female on separate plants; male catkins oblong or cylindrical, the females globular, without footstalks. Leaves thickly set, alternately or in whorls, linear or needle-shaped, spreading, but sometimes very small, scale-like, approaching imbricate, with a gland on the back. Cones thick, woody, nearly equally four-valved, globular, two or three together. Two species have been introduced. For culture, *see* **Callitris.**

W. cupressoides (Cypress-like). *l.* on the branches acute, somewhat spreading at the points; those on the branchlets four-rowed, much shorter, imbricated. *cones* ovate, obtuse, nine to ten lines long. Branches elongated, erect, pyramidal; branchlets slender, bent downwards, or pendent at the ends, covered with leaves. *h.* 4ft. to 10ft. South Africa, 1799. Shrub.

W. juniperoides (Juniper-like). Cape Gum-tree. *fl.*, male catkins oblong-cylindrical, terminal. *l.* adherent at base, decurrent, leathery, glaucous-green; young ones mostly linear or needle-shaped, sharp-pointed, spreading, slightly curved, opposite or in whorls of three, ⅜in. to 1in. long; adults scattered; those on the branchlets sometimes ovate-lanceolate or rhomboid, obtuse or sharp-pointed. *cones* three or four together, much smaller than in *W. cupressoides*, rounded, slightly depressed. Stem straight; branches erect or spreading. South Africa, 1756. Tree.

FIG. 220. PORTION OF INFLORESCENCE OF WIGANDIA MACROPHYLLA.

WIDOW, MOURNFUL. *See* **Scabiosa atropurpurea.**

WIDOW-WAIL. *See* **Cneorum.**

WIDOW-WISSE. An old name for *Genista tinctoria.*

WIGANDIA (named in honour of John Wigand, 1523-1587, a Bishop of Pomerania). ORD. *Hydrophyllaceæ.* A small genus (three or four closely-related species) of tall, hispid, stove or greenhouse herbs, broadly dispersed over the mountainous regions of tropical America. Flowers sessile at the sides of scorpioid branches, in terminal, amply dichotomous cymes; calyx segments linear; corolla tube short, broadly campanulate, not scaly, the limb ample, spreading, of five imbricated lobes; stamens five, nearly equally affixed, often exserted; filaments hispid with reflexed pili below the middle. Leaves alternate, ample, wrinkled, generally doubly-toothed. The species are frequently, on account of their fine foliage and bold habit, used for sub-tropical bedding. Seeds should be sown in early spring, in heat; and the seedlings grown on in light, loamy soil, hardened off, and planted out in the open in June. The plants may also be propagated by means of cuttings, inserted in sandy soil, in bottom heat, and carefully shaded until rooted.

FIG. 221. WIGANDIA URENS.

Wigandia—*continued.*

W. caracasana (Caraccas). A synonym of *W. macrophylla.*

W. macrophylla (large-leaved).* *fl.* lilac; sepals acute, hoary-tomentose, shorter than the corolla; spikes revolute at apex, secund, the rachis villous-pubescent. April. *l.* elliptic-cordate, slightly acute, hairy-tomentose, ferruginous above. *h.* 10ft. Caraccas, 1836. See Fig. 220. SYN. *W. caracasana* (B. M. 4575; B. R. 1966; F. d. S. 755; L. J. F. 132).

W. urens (stinging). *fl.* disposed in scorpioid panicles; calyx woolly, with linear, acute sepals; corolla violet-blue, the margins of the lobes somewhat revolute. Autumn. *h.* 6ft. Mexico (?), 1830. This species differs from *W. macrophylla* in its looser habit, and in its longer-stalked, more spreading leaves of a deeper ashy-green, shaded with red on the petioles. See Fig. 221.

FIG. 222. WIGANDIA VIGIERI.

W. Vigieri (Vigier's).* *fl.*, calyx green, exceeding the corolla tube, with five linear, acute sepals; corolla lilac-blue, passing through vinous-red to fawn-colour before fading, rotate-infundibular, woolly outside, glabrous; inflorescence very large, paniculate, divaricate. Autumn. *l.* alternate, oval-elliptic, cordate at the base, irregularly and sparsely toothed, channelled; petioles 9in. long. *h.* 6ft. Mexico (?), 1868. See Fig. 222.

WIG-TREE. A common name for **Rhus Cotinus** (which *see*).

WIKSTRÖMIA. A synonym of **Laplacea** (which *see*).

WILD APPLE, or **WILDING.** *See* **Pyrus Malus.**

WILD BERGAMOT. *See* **Monarda fistulosa.**

WILD CLARY. *See* **Salvia Verbenaca.**

WILD CLOVE *See* **Pimenta acris.**

WILD DATE. *See* **Phœnix sylvestris.**

WILD HYACINTH. *See* **Scilla nutans.**

WILD IRISHMAN. *See* **Discaria Toumatou.**

WILD OLIVE. *See* **Elæagnus** and **Olea europæa.**

WILD SNOWBALL. *See* **Ceanothus americanus.**

WILD WATER LEMON. *See* **Passiflora fœtida.**

WILD WILLIAM. An old name for *Lychnis Flos-cuculi.*

WILLDENOVIA (of Gmelin). A synonym of **Rondeletia** (which *see*).

WILLDENOWIA (named in honour of Charles Louis Willdenow, 1765-1812, Professor of Botany at Berlin). SYN. *Nematanthus* (of Nees). ORD. *Restiaceæ.* A genus comprising eight species of greenhouse herbs, with Rush-like, leafless stems, natives of South Africa. Flowers dicœcious; male spikelets loosely many-flowered, interruptedly spicate; females one-flowered, sessile. Sheaths loose, persistent. It is doubtful whether the under-mentioned species is still in cultivation. It thrives in a compost of loam and peat, and may be increased by divisions.

W. teres (terete). *fl.*, male inflorescence 2in. to 2½in. long, erect, spicately or paniculately cymose; female spikelets one to three at the apex of the culm. Sheaths 1½in. in length, convolute, fuscous, glabrous, acuminate at apex. Culms erect, 3ft. or more high, terete, virgate-branched near the middle; branches ascending, white-lepidoted and spotted with purple. 1790. The plant sometimes grown under this name is a species of *Restio.*

WILLEMETIA (named in honour of P. R. Willemet, 1762-1790, author of "Herbarium Mauritianum"). SYNS. *Noltia, Vittmannia.* ORD. *Rhamneæ.* A monotypic genus. The species is a pretty, perfectly glabrous, greenhouse shrub. It thrives in a compost of sandy loam and peat. Increased by cuttings, inserted in sand, under a glass.

W. africana (African). *fl.* white, in cymes and panicles about 1in. long; petals five, cucullate, sessile. May. *l.* alternate, oblong-lanceolate, more or less obtuse, serrated, feather-nerved, 2in. to 2½in. long, paler beneath. *h.* 10ft. to 12ft. South Africa. The proper name of this plant is now *Noltia africana.*

WILLESDEN PAPER AND CANVAS. For making temporary shelters where light is not necessary, the Paper and Canvas manufactured by the Willesden Paper Company possess all the requisite properties; being fairly cheap, they may be freely used for light coverings of any kind. The Paper is quite waterproof, light, and of fair tensile strength, as anyone who saw the pavilion erected in the grounds of the Crystal Palace, during the exhibition of 1884, will have noticed; except that visitors had cut the Paper about, the edifice was as sound nine months after erection as when first put up. A tank was also exhibited, which held about half a ton of water, the Paper not being saturated for quite two months; and no doubt it would have been sound for the whole time the exhibition lasted, but that some mischievous person stuck a knife through the side, to see if it was really Paper. These examples will show that the Paper will answer what is required of it, and therefore all that is left is to describe the manner of using it for garden purposes.

The stout brown Paper is the best for general use. It is made about 4½ft. wide, a useful size for temporary

Willesden Paper and Canvas—*continued.*

roofs, and for screens to put over frames or plants. So far as roofs are concerned, the makers give full directions, and therefore this part of the subject need not be considered here. The most useful appliances in any garden, for providing temporary shelter, are a number of frames about 6ft. long and the width of the paper. The woodwork should be about 1½in. in thickness, and should be braced across to keep the whole structure rigid. Over these frames the Paper should be nailed, preferably on both sides; thoroughly waterproof coverings, which will keep off a fair amount of frost, are thus made for protecting tender subjects in frames or beds, while for outdoor Mushroom-beds they are most convenient. Being flat and comparatively thin, a large number can be stowed away in a little space, when not required for active use. For wall trees of doubtful hardiness, the prepared Canvas, if put on frames, makes a good protective medium when the shelters are made as above, and, having more tensile strength than the Paper, will not be torn with any ordinary usage.

Besides being made into flat screens, wooden frames of different patterns, such as spans, and similar forms, can be constructed in light wooden framing, and covered with Willesden Paper, affording very decent protection against frost and snow to plants of doubtful hardiness in the borders. Larger frames can also be made for the protection of shrubs, &c. In all cases the Paper can be adapted to almost any form required, and a little ingenuity on the part of the user will lead to the construction of many most useful contrivances.

The lighter samples can also be used for packing plants; being waterproof, they prevent undue evaporation. For lining baskets containing cut flowers or plants, the Paper should be found very useful, as it can be made to fit the shape of the basket or hamper, and will last for a long time. Many things, such as hard-wooded cuttings, rose-buds, and similar stock, can be rolled in the Paper, the ends being folded over, and they will travel as well as in lead foil or rubber tissue, and at less cost. Waterproof labels, for writing on which no special ink is required, are also made of Willesden Paper; these are durable, and, being made in various sizes, are useful for many purposes. In fact, there is practically no end to the purposes to which this Paper can be applied in and about the garden.

WILLOW. *See* **Salix.**

WILLOW, AMERICAN WATER. A common name for **Dianthera americana** (which *see*).

WILLOW, FRENCH OR PERSIAN. *See* **Epilobium angustifolium.**

WILLOW GRASS. *See* **Polygonum amphibium.**

WILLOW HERB. *See* **Epilobium.**

WILLOW HORNET CLEARWING MOTH. *See* **Sesia.**

WILLOW, KILMARNOCK WEEPING. *See* **Salix Caprea pendula.**

WILLOW SAWFLIES. Few, if any, plants are more liable than Willows to be injured by Sawflies. By far the larger number of the species that feed on Willows and Sallows belong to the genus *Nematus*, but a few belong to two or three other genera. It would be useless to attempt to describe, or even to enumerate, the many kinds that have been found on the different species of *Salix*; suffice it to say that Cameron, in his "Monograph of British Phytophagous Hymenoptera," enumerates as British thirty-three species of *Nematus*, and twenty species under other genera, found on *Salix*; and that yet others have been recorded from the Continent of Europe as found on Willows.

Willow Sawflies—*continued.*

We cannot, therefore, do more than indicate briefly the chief modes in which these insects may prove hurtful.

The larvæ of many species feed, exposed to view, on the edges or the lower surface of the leaves, often keeping the hinder part of their bodies coiled in a spiral. Others live between folded or rolled leaves; and a few live in mines in the leaf-blades. Many species are Gall-makers; and of these the habits and the galls vary greatly. Several species, chiefly of *Euura*, produce swellings of the branches, mostly in those of the *cinerea* section of *Salix*. Each swelling is occupied by one larva. Others, mostly species of *Nematus*, produce galls of two or three forms on the leaves. One common kind of gall resembles peas in form and size, and is usually adherent to the lower surface; though on some Willows (*e.g.*, *S. purpurea*) the galls are more often fixed to the upper surface. The Pea Galls vary in surface-appendages according to the species of Willow, being smooth on some, downy on others. They are formed by *Nematus pedunculi*, and by several other species of this genus of Sawflies. Another very common form of gall on Willow leaves—often distinguished as "Bean Galls," from their shape—sometimes resembles small haricot beans in pairs, side by side, in the tissue of the leaf, projecting about equally from both of its surfaces. They are usually about ⅓in. long by ⅕in. broad. They are green or red on the upper surface, pale green below, and may be smooth or downy, according to the kind of Willow on which they are formed. One of the commonest Gall-makers of this group is *Nematus gallicola*, which makes the galls so often seen on the leaves of *Salix alba*, *S. Caprea*, *S. fragilis*, and other Willows; other species form somewhat similar galls on several of the smaller Willows, *e.g.*, *Salix Lapponum*, *S. nigricans*, *S. phylicifolia*, &c.; but it is impossible, in the brief space at disposal, to enter into a fuller discussion of these galls and their makers.

Remedies are scarcely called for unless the larvæ of Willow Sawflies are very plentiful. If so numerous as to endanger the health of the plants, those larvæ that feed exposed on the leaves may be dislodged by jarring or shaking the branches. They may be shaken into a vessel, and destroyed by having boiling water poured over them; or a ring of tar and cart-grease painted round the base of each tree will prevent them from crawling up again. The only reliable remedy against larvæ in rolled or mined leaves, or in galls, is hand-picking; but the damage is seldom so great as to call for so tedious and costly a remedy. As by far the greater number of the species burrow into the soil to become pupæ, any means to prevent their doing so tends to lessen the numbers of the insects. Rolling the ground below the trees, so as to render it compact, and applications of gas-lime, soot, or other substances poisonous or disagreeable to the insects, will prove useful in this way.

WILLUGBÆYA. A synonym of **Mikania** (which *see*).

WILLUGHBEIA (named after Francis Willughby, 1635-1672, an English naturalist, pupil of Ray). SYN. *Ancylocladus*. ORD. *Apocynaceæ*. A genus comprising eight or ten Malayan and East Asiatic species of stove, sarmentose or tall-climbing shrubs, all supposed to yield caoutchouc. Flowers in axillary cymes; calyx short, five-lobed; corolla salver-shaped, the tube nearly glabrous within, the mouth naked or with fleshy glands alternating with the lobes; stamens included in the tube. Berry large, globose or ovoid, many-seeded. Leaves opposite, on short petioles. For culture of *W. edulis*, the only species introduced, *see* **Allamanda.**

W. edulis (edible). *fl.* of a pale pink colour; cymes on short, stout peduncles. July. *fr.* edible, sub-ovoid, the size of a lemon. *l.* 4in. to 7in. long, oblong or obovate-oblong, obtusely acuminate or caudate, acute at base, thinly coriaceous; petioles ¼in. to ¾in. long. India, 1818. An immense climber.

WILLUGHBEIA (of Klotzsch). A synonym of **Landolphia** (which *see*).

WIND. The various points from which the Wind proceeds, and the amount of its force, are matters requiring daily consideration in the proper management of glass structures, and for the preservation against injury of plants and trees outside. The damage caused by a rough gale is often of a most disastrous nature; sometimes large and valuable trees are uprooted, or have their branches torn off, causing permanent disfigurement. In different localities and situations, what are known as the prevailing Winds have to be taken into account in planting operations: in some, the gales most frequently proceed from one particular point—south-west, for instance—while in others, a wood, hill, or large belt of trees may afford protection from that, but not from some other direction. Situations on various parts of the sea-coast, and also inland, will be locally affected in regard to prevailing Winds. The destruction caused by the Wind to fruit crops is, unfortunately, too familiar. Newly-planted trees of all kinds, of sufficient size to be rocked to and fro by the force of the Wind, should always be secured with stakes for the first season, after which their roots will have generally taken a good hold, thus rendering them safe. Plants in pots—Chrysanthemums, for example—are soon destroyed by a gale if not securely staked and tied. A cold Wind has a most injurious effect on the tender foliage of trees and plants in glass structures, particularly in early spring, when too frequently it proceeds from an easterly or north-easterly direction. Preventive measures should be adopted, as far as possible, beforehand, so that when the Wind's force is suddenly increased to a gale, everything may be secured against injury. Not unfrequently, the proper provision which it is necessary to make against rough weather is forgotten when trees are newly planted; or plants in pots are placed in exposed situations during a calm period; and the effects of the first rough Wind are disastrous.

WINDFALL. A term frequently applied to such fruits as may often be found lying in an immature condition below the trees, *e.g.*, Apples, &c. The young fruits may be knocked off by one branch striking on another in a high wind; but very frequently the cause of the premature fall will be found, on careful examination, to be the presence of some parasite in the fruit. The most frequent cause is a larva feeding on the seeds, *e.g.*, the Apple or Codlin Grub (*Carpocapsa pomonana*) in immature Apples. Such larvæ generally leave the fruit very soon after its fall, to burrow in the soil, and there to become pupæ. It is, therefore, very desirable to prevent future harm by having the Windfalls picked up without delay, and given to pigs, or placed where the larvæ may be unable to find a favourable situation for becoming pupæ.

WIND FLOWER. *See* **Anemone** and **Gentiana Pneumonanthe.**

WINDOW GARDEN. Many cottagers and amateurs who have no glass structure at their command take an especial interest in plant cultivation, and set admirable examples of what may be accomplished by constant attention, even in an ordinary window. Window Gardening has of late years made rapid strides, partly from the encouragement given to it locally by the managers of annual exhibitions, and even more so by the greater interest in the cultivation of flowers which has become so generally diffused. By the term Window Gardening, the cultivation of plants in a window, or on the sill outside in favourable weather, should only be referred to; decorative subjects that are grown to perfection elsewhere, and then used temporarily for windows, ought not to be judged in comparison. Windows facing south, or nearly so, are best adapted for plants generally; but many subjects will succeed admirably in less favourable aspects. The general potting of window plants is best attended to in spring, when the drainage must be rendered complete. As a rule, it is necessary to use saucers to prevent water running into the room; the water should be emptied out so soon as the plant is well soaked. When water is required—and this time can only be known by practice—a good soaking should be given, and in summer an occasional sprinkling over the foliage, through a fine rose or syringe, generally helps to keep the plants clean and in health. During severe frost, window plants are at times unsafe in their usual quarters; they should then be placed temporarily on the floor for the night; in the day-time, where there is a fire in the room, plants are usually safe in the window, unless they are of an exceptionally tender kind. Amongst window plants that generally succeed well, Zonal Pelargoniums, of various sorts, perhaps take first place; the scented-leaved ones are also great favourites. Other subjects which may readily be adapted to culture in the same position are: Fuchsias, Calceolarias, some of the dwarf Campanulas, Chinese Primulas, several kinds of Cacti, greenhouse Ferns, spring-flowering bulbs (such as Hyacinths and Tulips), Heliotropes, Myrtles, &c. Many more might be enumerated, but those mentioned afford a great selection. *Richardia africana* and *Vallota purpurea* sometimes succeed as window plants.

WINDROOT. *See* **Asclepias tuberosa.**

WIND ROSE. *See* **Rœmeria hybrida.**

WINEBERRY. An old name for the Whortleberry (*Vaccinium Myrtillus*).

WINE PALM, EAST INDIAN. *See* **Phœnix sylvestris.**

WINGS. The two lateral petals of a papilionaceous corolla; any kind of membranous expansion.

WINTERA. A synonym of **Drimys** (which *see*).

WINTER ACONITE. *See* **Eranthis.**

WINTERANA. A synonym of **Canella** (which *see*).

WINTERBERRY. A common name for several species of **Ilex** (which *see*).

WINTER BLOOM. A common name for **Hamamelis virginica** (which *see*).

WINTER CHERRY. *See* **Physalis Alkekengi.**

WINTER CLOVER. A common name for **Mitchella repens** (which *see*).

WINTER CRESS. *See* **Barbarea.**

WINTER DAFFODIL. *See* **Sternbergia lutea.**

WINTER GARDEN. A term usually employed to denote a very large, cool, glass structure, from which the frost is merely excluded, the interior being occupied by subjects insufficiently hardy to withstand our climate outside during the winter. A Winter Garden is generally of sufficient size to allow of the centre part of the interior being laid out in walks and large beds. The latter are planted with all the stronger-growing occupants that cannot be properly accommodated in pots. Amongst them Himalayan Rhododendrons may be specially mentioned, as their foliage is attractive at all seasons, and their flowers in spring and summer are amongst the most beautiful; Camellias, Australian Acacias, and other hard-wooded plants of a like description, Araucarias, many Tree Ferns, Palms, and any good plants that only require a little protection in winter. A Winter Garden, if treated as a conservatory, would admit of the introduction of all greenhouse plants in their seasons on the shelves

Winter Garden—*continued.*

around, while the central beds might be planted with some of the subjects mentioned above, according to the available height and space. Tea Roses may be trained to pillars, also on the roof, if convenient, and numerous beautiful conservatory climbers succeed well when similarly situated and kept tied.

WINTERGREEN. *See* **Pyrola.**

WINTERGREEN, AROMATIC OR CREEPING. *See* **Gaultheria procumbens.**

WINTERGREEN, CHICKWEED. *See* **Trientalis.**

WINTER MOTHS. A name given, because of the time of their appearance, to certain moths belonging to the group *Geometrina* (*see* **Moths**), which is characterised by the possession of a slender body, and wings large relatively to their size of body. Of the Winter Moths, however, the females are wingless, or, rather, possess mere vestiges of wings, utterly useless as organs of flight; the males are well provided with wings of considerable size. Most of the species are included in the genus **Hybernia** (which *see*); but the insect to which the name is peculiarly applied, and which is most widely destructive, is *Cheimatobia brumata*. In this species the spread of wings of the male may reach about 1¼in.; but it is usually under this size. Both sexes are greyish-brown, with several indistinct, darker, wavy lines or bands across the wings. The female is heavier in the body, and has extremely small front wings. The moths appear between the beginning of October and the end of December. The females must crawl up the trees to reach a suitable situation for laying eggs; or they may, at times, be carried from one place to another by the males. The eggs are usually laid in the crevices of the bark, and in other places fitted to give them protection. The larvæ are bluish-green, with a narrow, dark stripe down the middle of the back, and three narrow, white stripes on each side. In some the ground-colour is smoky or dark brown. They live upon almost all kinds of trees and shrubs. At first, they eat into the buds in early spring; and, when the leaves begin to enlarge, the larvæ spin two or more leaves together, and feed, protected between them, in safety. When full-fed, they lower themselves to the ground, burrow into it, and form earthen cocoons, in which they become pupæ about the end of May or the beginning of June.

Remedies. The larvæ of *C. brumata* are so destructive that it is often most desirable to prevent or to check their ravages. Nothing can be done while the larvæ are in the buds; but, when nearly full-fed, and living between the leaves, they can be dislodged by beating and shaking the branches. The shock causes them to lower themselves by silken threads, or to fall to the ground. They can thus be collected in cloths spread below the plants, or crushed under foot. It is well to put a belt of some sticky substance on the base of the tree-trunks, to prevent the re-ascent of larvæ. Digging the soil around the roots helps also to lessen the number of pupæ, by exposing them to the quick eyes of birds, or to predacious insects. The most effectual remedies are those employed for the destruction of the females, and for the prevention of their ascent of the tree-trunks. This is effected readily, because of the useless nature of their wings, which compels them to creep up the trunk, unless at times carried on to the trees attached to the males. Whatever substance is used, it must remain soft and sticky for a day or two, must not injure the trunks, and must be renewed sufficiently often to keep the surface of the ring of bark sticky, say about each second day. Among the best of the compounds for catching female moths is the substance known as Davidson's Composition, or a mixture of tar and grease in equal proportions.

WINTERSWEET. *See* **Toxicophlæa spectabilis.**

WINTER WOLF'S-BANE. A common name for **Eranthis hyemalis** (which *see*).

WIRE. Wire is extremely useful to florists and gardeners, who could not well do without it in making up bouquets and other personal decorations. Various thicknesses are used, according to the special purpose for which it is required: for instance, when flowers have to be provided with artificial stalks, short lengths of stiff Wire, known as "stubbs," are used. These are generally procured in bundles, cut into 6in. or 8in. lengths, which are found most convenient. Binding Wire is very fine, and is largely employed in bouquet-making for securing the short lengths, already referred to, to the flowers, and for tying all the stalks together. It is wound on reels, and is strong, although quite pliable.

The springs sometimes used for fixing certain kinds of flowers in bouquets, so that they shall move about, may be readily made by binding tightly the piece of small Wire which it is intended should form the spring round a piece of a rather larger size, and then slipping off the coil.

Wire is largely employed for both movable and permanent trellises in glass houses, &c.; for this purpose, it is best galvanised, to prevent rusting. Copper binding Wire, in quantities according to requirements, should be kept in stock; it is often useful, and there are small and large gauges of this made, as well as of iron, the other principal metal used in Wire-making. Wire netting, and its various uses, such as preserving vegetable crops from destruction by rabbits, &c., are familiar to everyone The "mesh" refers to the size of the spaces; thus Wire netting of 1in. mesh has the spaces that distance across, and so on with other finer or coarser sorts.

WIREWORMS. The popular name of certain pale yellowish-brown, slender larvæ, possessed of skins so tough and hard that they look and feel not unlike short pieces of moderately thick wire, flattened from above downwards. The body is of uniform thickness, and is marked with rings showing the divisions between the

FIG. 223. WIREWORM.

segments of which it consists (see Fig. 223). The head is small, flattened, and darker than the body. The three front body-rings bear each a pair of short, brown, true legs, and there is a solitary prehensile foot on the lower surface of the conical hindmost segment of the body. Wireworms feed near the surface of the soil, but concealed in it; and they gnaw the stems and roots of plants just below its surface. The plants are thereby killed, or, at least, very much injured; and the crops in gardens, as well as in the fields, are, occasionally, seriously damaged from this cause. When the Wireworms reach their full size, they burrow into the soil to a considerable depth, and each forms for itself an earthen cocoon. In this it becomes a pupa, usually about the end of summer. Many of the Beetles emerge after spending little more than a fortnight in the pupa state, but some, probably, do not emerge till the next spring or summer. Wireworms vary in size to some extent, as they are the larvæ of many kinds of Beetles, all belonging to the family *Elateridæ*, but they seldom reach 1in. in length. They feed on almost all kinds of herbaceous plants, but it has been observed that they avoid Mustard: hence it has been suggested that this plant should be sown in ground that is much infested by them, in order to starve them out.

The Beetles are well known under one or other of

Wireworms—*continued.*

the names Click Beetle, Snap Beetle, Spring Beetle, or Skipjack. All four names allude to the method by which the insects, when laid on their backs, right themselves, and which is described below. There are many species of Click Beetles distributed amongst numerous genera, which differ among themselves in minor peculiarities; but all of them have so strong a family likeness that they are easily recognised as members of the family *Elateridæ*. Their form is elongated, with nearly parallel sides, but the body is rather pointed behind; the surface is hard. The head is deeply sunk in the thorax; the latter is prolonged backwards at the hinder angles into two sharp points, which prevent lateral movements of the abdomen; it has a sharp, prominent spine on its front part below, and this spine fits into a groove in front of the base of the middle legs. The antennæ, which are often serrated, can be laid, for protection, into grooves on the lower surface of the head — one on each side. The legs are short, but the wings are large and powerful. The Beetles are usually black, often with the basal two-thirds of the elytra some shade between rusty-red and blood-red, less often with short, fuscous or yellowish hairs spread uniformly over the surface, or restricted to defined spots or patches. They seldom exceed ¾in. or fall below ⅓in. in length. The number of British species of this family is large, and the Beetles are abundant everywhere during autumn; but only a few of the species are large enough to be familiarly known by anyone except an entomologist. They may be often seen crawling on walls and among herbage. When approached, they allow themselves to drop for concealment; and their form renders them very liable to fall on their back. Their legs are too short to be of service in turning themselves over; but the spine on the breast is an efficient organ for this purpose. When one of the insects wishes to replace itself on its legs, it bends the body backwards till it rests only on the head and the tip of the abdomen. In this position the spine is dragged out of its groove, but, on the Beetle bringing the head up smartly, the spine springs back into its groove, and the back of the Beetle is struck so hard against the surface on which it lies, that the insect is thrown some inches into the air, like a skipjack, and usually falls on its legs. The names Skipjack and Spring Beetle refer to this power of leaping; Click Beetle and Snap Beetle refer to the sound produced in the leap. It is probable that the larvæ of almost all of the *Elateridæ* are Wireworms in appearance and in habits; but only a few of the species are known to be very injurious to garden and field produce; and some, at least, feed on decaying vegetable tissues.

The following are the most hurtful species, according to the observations of those entomologists who have most carefully studied the subject: *Agriotes sputator*, *A. lineatus*, and *A. obscurus*. The first of these is little more than ¼in. long, and is black, and slightly glossy, but is pubescent; the front edge and hinder angles of the thorax, and the greater part of the elytra, are dull yellowish-brown or dusky; the legs and antennæ are paler; the elytra are deeply punctate-striate. The other two species are about ⅓in. or ⅜in. long, and are thought by some to be forms of a single species. *A. lineatus* is fuscous, with greyish pubescence; the thorax is nearly black; the elytra are punctate-striate, the striæ (in pairs) greyish, the interspaces brown, so that the elytra are striped lengthwise with dull grey and brown; the limbs are rusty-red. *A. obscurus* is dull brown-black, with dark pubescence, the elytra faintly punctate-striate, and nearly black; the thighs are nearly black, the rest of the legs and the antennæ dull rusty-red. Still another species is probably a serious foe to cultivated plants at times. This is *Athous hæmorrhoidalis;* the insect is from ⅓in. to ½in. long, and is dusky-black, with the elytra brownish; the limbs are dull red, except the black thighs. In the perfect state these insects are harmless: the damage is done only in the larval condition. This stage has been observed to continue in *A. lineatus* during five years; hence, the larvæ have time to do much mischief. It would be useless to enumerate all the plants on which they have been observed to feed; but among the more important garden plants are Cabbages, Carrots, Dahlias, Irises, Lettuces, Onions, Pinks, Potatoes, Turnips, and other favourites. They also often seriously injure the grass in lawns. Where ground is allowed to lie unbroken for a time, they multiply, and from it they spread to the adjoining pieces of ground. When soil that has lain fallow, or has been a lawn for some years, is broken up, the crops grown in it are apt to suffer severely from attacks of Wireworm.

Wireworms—*continued.*

Remedies. When the larvæ are very numerous, the soil should be broken up, as this exposes the Wireworms to the eyes of birds. Deep-trenching has also been recommended as a useful measure. If practicable, one of the most successful methods is to starve out the larvæ by allowing the ground to lie fallow for a year, merely cutting down and destroying the weeds on it; or a crop of Mustard (*Brassica alba*) may be grown on it, as the larvæ avoid this plant. Frequent stirring of the soil is unfavourable to them; and so, to a slight extent, is the employment of a heavy roller. Various applications to the soil have been used with success. On ground allowed to lie fallow for a year, a good coating of fresh gas-lime is of great use; but where crops have to be grown without a break of this kind, soot and guano are better, scattered before or during heavy rain. One part of nitrate of soda to two of common salt has also worked well. In gardens, paraffin has been used in solution (one in fifteen) with success, for watering infested plants, or along drills of Carrots, &c. Where any plants are fading without apparent cause, the roots should be examined for Wireworms, and one of the remedies recommended above should be applied to the injured plants. Traps for Wireworms, formed of pieces of lettuce, carrot, or other favourite food, may also be used. These should be buried a little below the surface, and removed, examined every day, and the Wireworms on them collected and destroyed.

WISTARIA (named in honour of Caspar Wistar, 1761-1818, Professor of Anatomy in the University of Pennsylvania). Grape-flower Vine. SYNS. *Diplonyx* and *Thyrsanthus*. ORD. *Leguminosæ*. A small genus (four or five species) of hardy, tall, climbing, deciduous shrubs, natives of North America, China, and Japan. Flowers usually bluish, scattered at the sides of the rachis; two upper calyx teeth short and sub-connate, the lower ones usually longer; standard ample, with two parallel ridges at the base; wings oblong-falcate; racemes terminal; bracts very caducous. Pods elongated, torulose, two-valved. Leaves imparipinnate; leaflets entire, penni-veined and reticulate-venulose, often stipellate. Wistarias thrive in any good, loamy soil, and grow fast when once established. They are most readily propagated by layering the young growing shoots during the summer months, and detaching them from the the parent plant the following year.

W. brachybotrys (short-clustered). *fl.* violet-purple; standard orbicular; pedicels one-flowered, shorter than the acuminate, caducous bracts; racemes short, erect or loosely spreading. April. *l.* imparipinnate, four to six-jugate; leaflets petiolulate, truncate or sub-cordate at base, ovate-lanceolate, acuminate, silky-canescent on both sides. Branches tortuous. *h.* 3ft. to 5ft. Japan. (F. d. S. 880; S. Z. F. J. 45.)

W. chinensis (Chinese).* Chinese Kidney-bean Tree. *fl.* large, inodorous, produced in great abundance on established plants; wings of the corolla each having one auricle. May and June (sometimes a second crop of flowers in August). *l.*, leaflets ovate, acuminate, in opposite, distant pairs, clothed on both sides with a thin, silky, adpressed pubescence. China, 1816. See Fig. 224.

Wistaria—*continued.*

SYNS. *W. sinensis*, *Glycine chinensis* B. M. 2083), *G. sinensis* (B. R. 650; L. B. C. 773).

W. c. flore-pleno (double-flowered). A handsome variety, with double flowers. 1882. (F. & P. 1882, 557.)

W. c. macrobotrys (large-clustered). *fl.* white, tinted with bluish-purple, borne in very long racemes. Japan, 1870.

W. c. variegata (variegated). A form with bright silvery-variegated foliage. 1886.

FIG. 224. PORTION OF FLOWERING BRANCH OF WISTARIA CHINENSIS.

W. frutescens (shrubby). American Kidney-bean Tree. *fl.* odorous; racemes 4in. to 6in. long, 2in. to 3in. in diameter, on short branches, dense-flowered; bracts large, caducous. April and May. *fr.*, pods one or several-seeded. *l.*, young ones (and branches) silky-pubescent; leaflets nine to thirteen, 1in. long, ovate-lanceolate or oblong; stipels none. North America, 1724. SYNS. *Glycine frutescens* (B. M. 2103) and *Thyrsanthus frutescens*.

W. japonica (Japanese).* *fl.* white, in simple, nodding racemes; standard obovate, obtuse, entire; pedicels one flowered, horizontally spreading, terete; peduncles slender. July and August. *l.* imparipinnate, four to six-jugate; leaflets pedicellate, ovate or ovate-lanceolate, obtuse, acuminate, entire, petiolulate. Japan. A glabrous, twining shrub. (S. Z. F. J. 43.)

W. multijuga (many-paired). *fl.* lilac, with purple wings and keel, rather smaller than in *W. chinensis*, and growing in racemes which are said to be upwards of 2ft. in length. Summer. *l.* pinnate; leaflets numerous, elliptic-ovate, acuminate. Japan, 1874. (F. d. S. 2002.)

W. sinensis (Chinese). A synonym of *W. chinensis*.

WISTARIA, TUBEROUS-ROOTED. *See* **Apios tuberosa.**

WITCHES' THIMBLE. *See* **Silene maritima.**

WITCH HAZEL. *See* **Hamamelis.**

WITCH KNOTS. The name popularly bestowed on the curious clusters of twigs (looking very much like the nest of a rook, or some other large bird, when seen from a distance) that so frequently occur on the larger branches of Birch, Hornbeam, and certain other trees. The twigs are usually somewhat swollen, and both they and the sickly-looking leaves upon them are duller green than usual, and frequently show a slightly velvety surface. The causes of these deformities escaped detection till they were carefully investigated a few years ago with the microscope, and were found to differ in various trees.

Witch Knots—*continued.*

In Birch and Hornbeam, they are the work of minute Fungi, belonging to a very lowly group of *Ascomycetes*. The mycelium of the Fungi lives in the tissues of the host-plant's leaves and bark; and the velvety appearance mentioned above results from the outgrowth over the whole epidermis of the organs of reproduction. These latter consist of asci (*see* **Pyrenomycetes**) in each of which eight (or more) spores are formed, and from which they are scattered when mature. The asci in *Exoascus* (as the most important genus of Witch Knot Fungi is called) are quite exposed to casualties from without, instead of being inclosed in a perithecium, as in *Pyrenomycetes*. The number of asci and of spores is immense; but they are far too small individually to be detected, except when thin sections of the diseased parts are examined with a lens of high magnifying power. The following species of *Exoascus* give rise to Witch Knots: *E. turgidus*, on Birch; *E. Carpini*, on Hornbeam; and *E. Institiæ*, on Bullace. It may be noted that other species of the genus produce distortions of the leaves of various trees and shrubs (Poplars, Alder, Elm, Cherry, &c.), and that *E. Pruni* is the cause of the disease of the fruit in various species of *Prunus* known as "Bladder Plums."

In the Birch, a diseased condition, a good deal like a young Witch Knot, is often of frequent occurrence. It is the work of a species of *Phytoptus* or Gall-mite (*see* **Mites**), and results from the stimulation, by the myriads of minute Mites, of the growing tissues in the buds, which are increased in size, but never develop properly. The buds in the axils of the leaf-scales, instead of remaining undeveloped, enlarge to a conspicuous size, or grow into stunted branches; and on this process being repeated year after year, the mass of buds, &c., may reach the size of a cricket ball, but is usually smaller. There is no real difficulty in distinguishing these Mite Galls from true Witch Knots caused by Fungi. The Silver Fir (*Abies pectinata*) occasionally bears Witch Knots, which are made up of a central swelling of the stem, or of a large limb. From this arise one or more branches, on which grow very many small branches crowded densely together. The needles are short, thick, brittle, and bright green. All parts of the Witch Knots are traversed by mycelium; and the leaves bear over their surfaces numerous small, yellow, membranous cups, filled with minute, yellow spores for reproduction. These are the characteristic "fruits" of a Fungus named *Æcidium elatinum*. This Fungus renders the stems, &c., brittle, and liable to injury from wind; and it also causes the leaves to fall early.

Treatment. The only method likely to be of use is to cut off and burn Witch Knots of all kinds, to prevent the diseases from being propagated by the spores.

WITCH OR WYCH ELM. *See* **Ulmus montana.**

WITHERINGIA (name commemorative of William Withering, of Birmingham, 1741-1799, author of a "Botanical Arrangement of the Vegetables of Great Britain," 1776). SYNS. *Aureliana*, *Bassovia* (now the correct name). ORD. *Solanaceæ*. A genus comprising about a dozen species of stove or greenhouse, erect or

Witheringia—*continued.*

sarmentose shrubs or small trees, rarely tall herbs, natives of South and Central America and the West Indies. Flowers often rather small; calyx five to ten-toothed; corolla deeply five-cleft; pedicels often fascicled, umbellate, solitary or twin. Leaves entire or slightly sinuate. Most of the species formerly known in gardens as Witheringias have been removed to **Solanum** (which *see*), but it is doubtful if any are now cultivated.

WITHE ROD, AMERICAN. *See* **Viburnum nudum.**

WITHY. *See* **Salix fragilis.**

WITLOOF. A variety of Chicory (*Cichorium Intybus*).

WITSENIA (named after Nicholas Witsen, a Dutch patron of botany). ORD. *Irideæ*. A monotypic genus. The species is an ornamental, greenhouse shrub. It thrives in sandy peat, and may be increased by divisions, or by seeds.

W. corymbosa (corymbose).* *fl.* one (or two?) to a spathe, subsessile; perianth purplish-blue, the tube elongated, cylindrical; lobes erect, connivent, the outer ones rather thick, tomentose at back, the inner ones shorter; stamens affixed to the throat, shorter than the perianth; spathes usually twin in the axils of the upper bracts. June. *l.* erect, ensiform, equitant, rather rigid; upper ones smaller, clustered. Stem tall, branched, compressed, acutely angled. South Africa, 1803. (B. 125; B. R. 5; F. d. S. 72; P. M. B. viii., p. 221.)

WITTEBROOM. *See* **Leucadendron.**

WITTELSBACHIA. A synonym of **Cochlospermum** (which *see*).

WOAD, DYER'S. *See* **Isatis tinctoria.**

WOAD, WAXEN. A common name for **Genista tinctoria** (which *see*).

WOAD, WILD. A common name for **Reseda Luteola** (which *see*).

WOLF BERRY. *See* **Symphoricarpus occidentalis.**

WOLF CHOP. A common name for **Mesembryanthemum lupinum** (which *see*).

WOLF'S BANE. *See* **Aconitum.**

WOLF'S BANE, WINTER. *See* **Eranthis hyemalis.**

WOLF'S CLAW. A common name for **Lycopodium clavatum** (which *see*).

WOLF'S MILK. *See* **Euphorbia.**

WOLLASTONIA. Included under **Wedelia** (which *see*).

WOMAN'S-CAP ORCHID. *See* **Thelymitra.**

WONGA-WONGA VINE. *See* **Tecoma australis.**

WOOD. The hard part of a stem, formed chiefly of woody tissue or pleurenchyma.

WOOD ASHES. The Ashes obtained from wood, after all the organic compounds have been destroyed by burning, form a very valuable manure, as they contain potash compounds, and also the other mineral substances that existed in the plants from which they were prepared. These Ashes usually contain the elements in forms that can be made use of by most plants in their nutrition. They are of especial value to the same species as yielded the wood from which they were prepared, since they possess all the mineral elements required by such plants, and, for the most part, in the desirable proportions. The Ashes that remain after weeds are burned may be employed like Wood Ashes, being similar in general composition; but it is usually better economy to make

Wood Ashes—*continued.*

up the weeds into a compost, and to employ them after slow decomposition with urine. Wood Ashes may be applied pure, or may be previously mixed with dung or other organic manures, *e.g.*, guano. They are sometimes made use of against insect depredations, either dusted without mixture on the plants, or mixed with powdered Pyrethrum leaves or Paris Green (Arseniate of Copper).

WOOD BETONY. *See* **Peduncularis canadensis** and **Stachys Betonica.**

WOODBINE. *See* **Lonicera Periclymenum.**

WOODBINE, AMERICAN. A common name for **Ampelopsis quinquefolia** (which *see*).

WOOD-BORING BEES. In many localities where there is a supply of decaying wood in which to form their burrows, these insects are not uncommon. Each female works independently of the others—not, as do Hive Bees and Humble Bees, in societies, for the good of the community. Each digs out a burrow for herself; forms one or more cells in it; stores her cells with pollen or other food suitable for the nourishment of her larvæ; lays an egg in the mass in each cell; closes up the mouth of the latter; and leaves the larva to escape from the egg, to live on the food stored up for it, and to pass through its development. At last the young Bees escape from the cells, and from the burrows when they are fully mature, to repeat the process for the benefit of their own offspring in turn. There are several kinds of Wood-boring Bees found in England, belonging to more than one genus. They show a considerable likeness to the common Hive Bee, so that they might be mistaken for the latter by a casual observer. Some of them burrow not only in decaying wood, but also in old walls, in the ground, or even in soft sandstone. The species of *Megachile* are called "Leaf-cutter Bees," as they cut pieces from the leaves of Roses, or other plants, and employ them in forming the cells for containing the larval food in the burrows. The end of each cell is closed by a set of circular pieces of leaf. Another Wood-borer has had one of its habits recorded by the well-known Rev. Gilbert White, of Selborne. This habit is that of stripping off the hairs from the surface of various plants, shaving the stems bare, as White says, "with all the dexterity of a hoop-shaver," and flying away with a bundle held between its chin and fore legs, almost as large as itself. With the hairs the female collects in this way she forms cells by uniting them with some sticky cement into a substance like felt. The cells are made in burrows dug out of the rotten wood of decaying Willows. This Bee's scientific name is *Anthidium manicatum*.

WOOD-BRONEY. An old name for the Ash (*Fraxinus*).

WOOD FERN. *See* **Polypodium vulgare.**

WOODFORDIA (named after J. Woodford, who wrote an account of the plants round Edinburgh in 1824). ORD. *Lythrarieæ*. A monotypic genus. The species is a stove shrub, with long, spreading branches. For culture, *see* **Leianthus.**

W. floribunda (bundle-flowered). *fl.* scarlet, in short, panicled cymes on axillary peduncles, rarely solitary; calyx ¼in. to ½in. long, six-toothed; petals six, scarcely longer than the calyx, or wanting. May and June. *l.* 2in. to 4in. long, opposite or nearly so, entire, lanceolate, usually rounded or cordate at base, often grey-pubescent beneath. *h.* 1ft. to 4ft. India, &c. SYNS. *W. tomentosa* (B. F. S. xiv.), *Grislea tomentosa* (B. M. 1906).

W. tomentosa (tomentose). A synonym of *W. floribunda*.

WOOD LEOPARD MOTH. *See* **Zeuzera æsculi.**

WOOD LILY. A common name for *Pyrola minor* and various species of *Trillium*.

WOOD NUT. A popular name for **Corylus Avellana** (which *see*).

WOOD OR SPURGE LAUREL. *See* **Daphne Laureola.**

WOODRUFF, or **WOODROWEL.** A common name for several species of *Asperula.*

WOODSIA (named in honour of Joseph Woods, 1776-1864, author of "The Tourists' Flora"). Including *Hymenocystis* and *Physematium.* ORD. *Filices.* A genus comprising about fourteen species of small, much-tufted, stove, greenhouse, or hardy Ferns, mostly inhabiting cold or temperate climates. Stipes often jointed and separating at the joint. Sori globose; involucre inferior, soft-membranous, from the first calyciform or more or less globose, and sometimes inclosing the sorus, at length opening at the top, the margin or mouth irregular, lobed or fringed. The best-known species are here described. With the exception of *W. mollis*, all the exotic species thrive in a cool house. For general culture, *see* **Ferns.**

W. alpina (alpine). A garden name for *W. hyperborea.*

W. Brownii (Brown's). A synonym of *Hypoderris Brownii.*

W. caucasica (Caucasian). *fronds* lanceolate, 9in. long, glandular-hirsute on the rachis and midrib, firm-membranous, bipinnate; primary pinnæ sessile, nearly opposite, lanceolate, broadest at the base, acuminate-pinnatifid or again pinnate; lobes or ultimate pinnules oblong, acute, serrated. *sori* large, two on each lobe or pinnule, one on each side near the margin; involucre globose. Caucasus. SYN. *Hymenocystis caucasica.*

W. glabella (nearly glabrous). *sti.* short. *fr.* linear, slightly tapering below, pinnate; pinnæ very remote towards the short stipes, all deltoid, very obtuse, cut into from three to seven shortly rounded or sub-cuneate, entire lobes. North America, Norway, 1827. Baker regards this as possibly a glabrous form of *W. hyperborea.* (H. F. B. A. ii. 237.)

FIG. 225. WOODSIA HYPERBOREA.

W. hyperborea (extreme-northern). *rootstock* stout, somewhat elongated. *sti.* shining, clothed with ferruginous scales. *fronds* 3in. to 6in. long, linear-lanceolate, densely tufted; pinnæ somewhat distant, ovate-cordate, ⅛in. to ¼in. long, pubescent and ciliated, with a few broad lobes. *sori* three to five on each lobe. Arctic Europe (Britain), &c. See Fig. 225. SYN. *W. alpina* (of gardens). (Sy. En. B. 1363.)

W. ilvensis (Elba). *fronds* broadly lanceolate; pinnæ oblong, obtuse, broader at the base, sessile, deeply pinnatifid, with many oblong, sub-crenate lobes. Alpine regions of Northern hemisphere. See Fig. 226. (Sy. En. B. 1362.) Ilva, whence *ilvensis* is derived, is the classical name for the island of Elba. The species received the name because Linnæus believed this Fern

Woodsia—*continued.*

to be the same as one figured by Dalechamp, named *Lonchitis aspera ilvensis.*

FIG. 226. WOODSIA ILVENSIS.

W. mollis (soft).* *fronds* lanceolate, pinnate, generally densely clothed, especially beneath, with short, jointed hairs, scarcely attenuated below; pinnæ sessile from a broader base, oblong, obtuse, pinnatifid; lobes approximate, oval or nearly round, entire or crenate. *sori* marginal; involucre opening with a jagged, circular mouth. Mexico, Guatemala, &c. Greenhouse. SYN. *Physematium mollis.*

FIG. 227. WOODSIA OBTUSA.

W. obtusa (obtuse).* *sti.* tufted, not articulated, 3in. to 6in. long, castaneous towards the base. *fronds* oblong-lanceolate, narrowed to both ends, 6in. to 9in long, bipinnate or tripinnatifid; central pinnæ sessile, lanceolate-deltoid, 1in. to 1½in. long, the lower ones reduced; pinnules oblong, blunt, crenulate, or the lowest sub-pinnatifid, glandular-pilose. *sori* sub-marginal,

Woodsia—*continued.*

six to twelve to the largest pinnules; involucre a small, membranous, lacerated, white cup. United States to Peru. See Fig. 227. (H. G. F. 43.) SYN. *W. Perriniana.*

W. oregana (Oregon). *sti.* densely tufted, not articulated, castaneous, 2in. to 4in. long. *fronds* oblong-lanceolate, narrowed to both ends, 3in. to 4in. long, bipinnate, glabrous; pinnæ lanceolate, sessile, the central ones ⅜in. to ½in. long, cut down to the rachis or a narrow wing into blunt, oblong, crenate lobes, the lower ones distant, gradually reduced; rachis stramineous. *sori* sub-marginal; involucre hidden by the sorus. North America. Closely allied to *W. obtusa.*

W. Perriniana (Perrin's). A synonym of *W. obtusa.*

W. polystichoides (Polystichum-like).* *fronds* 9in. long, opaque, lanceolate, pinnate, sparsely subulate-squamulose; pinnæ spreading, approximate, sessile, 6in. to 8in. long, lanceolate, acute, cuneate-truncate at base, acutely auricled at the superior base, entire or obsoletely crenate at the apex, indistinctly costate. *sori* marginal in a distinct line or series; involucre globose, of four or five ciliated, incurved scales. Japan, 1863.

W. p. sinuata (sinuate). *fronds*, pinnæ broader, more obtuse, lobed-pinnatifid. (H. G. F. 32, f. 3.)

W. p. Veitchii (Veitch's). *fronds* very villous (H. G. F. 32, ff. 1, 2, 4-6.)

W. scopulina (brush-like). *sti.* densely tufted, 2in. to 3in. long, castaneous below. *fronds* 4in. to 6in. long, oblong-lanceolate, bipinnate, narrowed from the middle to both ends; central pinnæ lanceolate, sessile, ⅛in. to ¼in. long, cut down to the rachis or a narrow wing into close, ligulate-oblong, crenate-pinnatifid lobes; upper surface slightly, lower densely, glandular-pilose, with a few minute scales on the ribs. Rocky Mountains, 1884. "Scarcely more than a variety of *S. obtusa*" (Baker).

WOOD SORREL (*Oxalis Acetosella*). A hardy, native perennial, occasionally cultivated for the use of its young leaves in salads. It should be cut over frequently, and not allowed to produce seed in gardens, or else the seedlings may become troublesome weeds. A cool, shady place is best suited, but the plant is seldom cultivated. If a few specimens are desired, they are best procured in spring and transplanted from places where they grow naturally.

WOOD SOWER. An old name for the common Wood Sorrel (*Oxalis Acetosella*).

WOOD TIGER MOTH. *See* **Tiger Moths.**

WOOD-TONGUE FERN. *See* **Drymoglossum.**

WOOD VIOLET. *See* **Viola sylvatica.**

WOODWARDIA (named after Thomas Jenkinson Woodward, an English botanist). Chain Fern. Including *Anchistea* and *Lorinseria.* ORD. *Filices.* A small genus (about half-a-dozen species) of highly decorative, greenhouse or half-hardy Ferns, belting the world in the North temperate zone, extending very slightly within the tropics. Fronds usually ample and bipinnatifid. Sori linear or linear-oblong, sunk in cavities of the frond, placed in single rows parallel with, and contiguous to, the midribs of the pinnæ and pinnules; involucre sub-coriaceous, the same shape as the sorus, closing over the cavity like a lid. Woodwardias thrive in any well-drained, light, rich soil, and require plenty of water, both at the roots and overhead, during the summer months. They succeed well if planted out in the conservatory border, and grow much more vigorously than in pots. For general culture, *see* **Ferns.**

Woodwardia—*continued.*

W. angustifolia (narrow-fronded). A synonym of *W. areolata.*

W. areolata (areolate).* *barren fronds* 9in. to 12in. long, 6in. to 8in. broad, on a slender stipes, deltoid-ovate, with numerous oblong-lanceolate, sinuated pinnæ on each side, the lower ones 3in. to 4in. long, ½in. to ¾in. broad, reaching down to the rachis, which above has a broad wing; both surfaces naked. *fertile fronds* on an elongated, strong, erect, chestnut-brown, naked stem; pinnæ 3in. to 4in. long, narrow-linear, ½in. to 1in. apart. United States, 1812. See Fig. 228. (H. G. F. 61.) SYN. *W. angustifolia.*

FIG. 228. BARREN FROND OF WOODWARDIA AREOLATA.

W. Harlandii (Harland's). *sti.* 6in. to 18in. long, erect, nearly naked. *barren fronds* varying in shape from linear-lanceolate, undivided, to broadly ovate, with one or two spreading, linear-lanceolate lobes, 3in. to 4in. long, ½in. to ¾in. broad, reaching down to a broadly-winged rachis; both surfaces naked. *fertile fronds* with more numerous and narrower lobes, the lowest pair often quite free of the others. *sori* in broad lines close to the midrib of the lobes, with short lines branching from these in an erecto-patent direction. Hong Kong.

W. japonica (Japanese). *sti.* 6in. to 12in. long, erect, scaly below. *fronds* broadly ovate, 1ft. to 1½ft. long, 9in. to 12in. broad; pinnæ lanceolate, often 6in. long, 1in. to 1¼in. broad, reaching half or two-thirds of the way down to the rachis, the lines of sori which margin the midrib of the pinnæ confined to the upper part of the upper ones. China and Japan.

W. orientalis (Eastern). *sti.* erect, densely scaly at base. *fronds* 4ft. to 8ft. long, 1ft. to 1½ft. broad; pinnæ lanceolate, sometimes more than 1ft. long, cut down below nearly to the

Woodwardia—*continued.*

rachis into sinuated or pinnatifid pinnules, sometimes 4in. long, those of the under side shorter, and none at the base of the pinnæ; veins copiously anastomosing outside the sori; upper surface often producing copious, gemmiferous buds. Japan to Formosa. Closely allied to *W. radicans*.

W. radicans (rooting).* *sti.* strong, erect, naked, scaly at base. *fronds* 3ft. to 6ft. long, 1ft. to 1½ft. broad; pinnæ lanceolate, the lower ones often 1ft. long, cut down below within a short distance of the rachis into finely-toothed, lanceolate pinnules 1in. to 1½in. long, those of the under side the shortest; veins anastomosing once outside the line of fruit; gemmæ few and large, placed at the base of the upper pinnæ. Canaries, South Europe, &c., 1779.

W. r. cristata (crested).* A handsome variety, with regularly and symmetrically crested pinnæ. 1878.

FIG. 229. PINNA OF FERTILE FROND OF WOODWARDIA VIRGINICA.

W. virginica (Virginian). *sti.* strong, erect, 1ft. to 1½ft. long. *fronds* oblong-lanceolate, 1ft. to 1½ft. long, 6in. to 9in. broad; pinnæ linear-lanceolate, 4in. to 6in. long, ¾in. to 1in. broad, cut down within one line or less of the rachis into linear-oblong lobes, which are two to three lines broad at the base, the lines of sori which margin the midrib of the pinnæ often reaching low down in the lower ones. Canada, southward, 1774. See Fig. 229.

WOOD, WAXEN. A common name for **Genista tinctoria** (which *see*).

WOODY NIGHTSHADE. *See* **Solanum Dulcamara.**

WOOLLEN. An old name for Mullein (*Verbascum*).

WOOLLEN RAGS. Occasionally, these are used as manure. They should be torn or cut up into shreds, and dug into the soil. There they decay slowly, and decompose into substances useful to plants, ammonia being formed, among other products. Owing to their slow decay, their effects are perceived for two or three years. Their action as manure is hastened by steeping them for some months in Sulphuric Acid or Oil of Vitriol; but their fertilising influence ceases more quickly after

Woollen Rags—*continued.*

this treatment. Woollen refuse and rags are made great use of in Kent as manure for Hops, after having been made up for some time in a compost.

WOOLLY APHIS (*Schizoneura lanigera*). An insect more often called the **American Blight** (which *see*). A few particulars may be added to the account already given of this very dangerous pest to Apple-trees. The wingless females are oval and flattened, with deep constrictions between the body-rings. In general appearance they much resemble blackish-brown Aphides; but the antennæ and limbs are very short, the tail is very small, and the two honey-tubes are extremely small. These wingless females live on the bark, sucking its juices, and produce multitudes of living larvæ, like themselves on a smaller scale. In autumn, winged viviparous females also are found, differing from the wingless females in little but the possession of wings. The winged females produce small, ill-developed insects, of which each gives birth to one egg for the continuance of the species during winter. The larvæ seem to suffer very little from the action of low temperatures, as they are protected under the cottony excretions with which they cover themselves. It is said that in winter they fix themselves on the roots of Apple-trees, and suck the sap from them, returning to the branches in spring. The pupæ are like the winged females, except in having the wings represented only by little scales. The males are small, and, like the winged females, are unable to suck, as the beak is undeveloped.

The popular name (American Blight) points to the belief that this insect has been imported from America into Europe. The earliest European record of its occurrence dates from 1787. In England, it was first observed in a nursery, near London, in which were Apple-trees recently imported from North America. It soon spread, with disastrous results, into the orchards of Devonshire. In Germany it was first observed in 1801, in France and Belgium in 1812. It is now plentiful in many parts of Europe. It feeds on the wild Crab Apple of North America; but several leading American entomologists believe that it has been carried from Europe to America, and not in the reverse direction, as generally supposed.

Remedies. A number of the more highly recommended remedies are mentioned under **American Blight.** The most important point to attend to is the thorough cleansing of the branches, by the aid of a thick brush and any good insecticide, *e.g.*, soft soap in water, alone or mixed with crude carbolic acid of such a strength that the acid does not separate as oily drops when the soap is mixed with water. Usually, about one part of acid to ten of soap is sufficient, thoroughly mixed before water is added. The solution may be used moderately strong to the older branches, weaker to the younger ones. Kerosene may be used instead of the above—Professor Comstock states that he has sprayed it pure on plants, without injury to them—but it is usually employed diluted with four or five times its bulk of water; in this strength it may be applied to the branches without risk of injury. Another useful remedy is employed thus: Towards the end of autumn, or in winter when the weather is mild, the earth for about 3ft. from the tree is thrown back from the old roots, and one or two pailfuls of lime-water, or of lye of wood ashes, is poured in; then about 1in. of newly-slaked lime is scattered in, and the earth is replaced. All small branches on which the insect is established should be cut off and burned.

WORM GRASS. *See* **Spigelia marilandica.**

WORMIA (named in honour of Olaus Wormius, a famous Danish philosopher and naturalist). SYN. *Lenidia.* ORD. *Dilleniaceæ.* A genus comprising nine species of stove trees; one is found in the Mascarene Islands, another is Australian, and the rest inhabit tropical Asia. Flowers showy, disposed in terminal, often few-flowered panicles;

Wormia—*continued.*

sepals five, spreading; petals five; stamens nearly free. Leaves ample, parallel-penniveined. Only two species have been introduced. They thrive in a light, sandy loam. Cuttings of half-ripened wood root readily, if inserted in sand, under a glass, in bottom heat.

W. Burbidgei (Burbidge's).* *fl.* pale golden-yellow, 3in. in diameter, sub-cymose on a simple peduncle 2in. to 4in. long; petals obovate-oblong, with broadly undulated margins; stamens almost white. July. *l.* 8in. to 10in. long, almost exactly elliptic, the base contracted and decurrent as a very broad petiole, 1in. to 1½in. long, which expands and is amplexicaul at base. Branches terete. North Borneo. (B. M. 6531.)

W. dentata (toothed). A synonym of *W. triquetra.*

W. triquetra (triquetrous). *fl.* white, 2in. in diameter, in subterminal, leaf-opposed, secund, few-flowered racemes; pedicels 1in. long, thickened upwards. May. *l.* broadly oval, 5in. to 8in. long, repand-toothed or sinuated, the tip obtuse or subtruncate, the base rounded; petioles with broad, sheathing, deciduous wings. *h.* 20ft. Ceylon, 1818. SYN. *W. dentata.*

WORMS. Under this name will be discussed only the Earth Worms, since the Nematoid Worms have been already treated of. The Earth Worms all belong to the genus *Lumbricus;* but many species have been named and described. Their general appearance is too well known to call for description. They possess two rows of bristles along the sides of the body, so short as to be almost invisible, but stiff, and adapted for enabling the Worms to move by their aid; they can be felt on drawing a finger along the sides of the body from behind forwards. On damp evenings and nights the Worms stretch out of their holes to seize on food, and to drag it into their burrows. The trembling of the soil due to footsteps, or the approach of a light, causes a very rapid retreat into their holes. In winter, and in very dry weather, they burrow deep into the soil, beyond the reach of cold and droughts. They feed on decaying vegetable substances, and swallow much earth to obtain such remains of plants as are in it. The earth, after the vegetable matter is digested by the Worm, is ejected close to the opening of the burrow in the form known to all gardeners as "worm-castings."

In most cases, Worms ought to be regarded as useful creatures, since they constantly renew the surface soil with finely-divided earth brought from the subsoil, and, by means of their burrows, allow the free penetration of rain and air to greater depths than would otherwise be reached. They also promote the more rapid decay of the vegetable remains in the soil. But, on the other hand, they are obnoxious on lawns and in flower borders, because of the untidy appearance of their castings, and of the pieces of leaves, paper, and other things dragged partially into their burrows. They also disfigure plants by dragging in the ends of living leaves. When they get into flower-pots, they are troublesome or hurtful, and should be ejected.

Remedies. After or during mild, warm showers in the dusk of evening, Worms crawl out in large numbers from their holes in search of food, and can be collected by the aid of a lantern; but the operation must be quickly performed, for the reason above stated. Watering the soil—whether in a flower-pot, lawn, or flower border—with a weak solution of smelling salts or Carbonate of Ammonia causes the Worms to come to the surface in a nearly helpless state; and an infusion prepared from Walnut leaves has the same effect. This should be done in the evening. An undue increase in their numbers may be checked by keeping in gardens such creatures as hedgehogs, shrew-mice, frogs, and the *Testacella* slugs, which feed largely on Worms.

WORMWOOD (*Artemisia Absinthium*). A hardy perennial, grown for the use of its leaves and tops medicinally; they are intensely bitter. The plants prefer a somewhat sheltered, rather dry position; very few specimens are generally sufficient. Propagated by seeds, cuttings, and division of the roots, in spring.

WOUNDS. These are often caused in fruit and other trees by an improper use of a knife or hammer, also by friction, *e.g.*, when two branches rub against each other, and in many other ways. Wounds are invariably longer in getting callused and grown over than clean cuts; hence care should specially be taken to prevent any being made in the bark of trees, &c., for want of proper attention or appliances.

WOUNDWORT. *See* **Anthyllis Vulneraria** and **Stachys.**

WOUNDWORT, HERCULES'. A common name for **Heracleum** (which *see*).

WREATH. A floral head-dress which goes all round the head. It is generally made up of choice flowers of rather small or medium size. Another kind of Wreath is that made, in various sizes, of fresh or dried flowers, for funerals, &c. The outline is circular; and a framework upon which to fasten the flowers may easily be made with a piece of strong wire, or of thin board or cardboard, cut into the size and shape desired. Either green moss or sprigs of Myrtle or Box may be bound round to cover the frame before the flowers are arranged

WREATHEWORT, PURPLE. A common name for **Orchis mascula** (which *see*).

WREATH, PURPLE. *See* **Petræa volubilis.**

WRIGHTIA (named after William Wright, 1740-1827, a Scotch physician and botanist). Palay or Ivory-tree. SYN. *Balfouria.* ORD. *Apocynaceæ.* A genus including about a dozen species of stove shrubs or small trees, with often slender, cord-like branches, natives of tropical Africa, Asia, and Australia. Flowers red, white, or yellow, in terminal or sub-axillary, sessile cymes; calyx short, five-parted, with glands or scales inside; corolla salver-shaped, the tube cylindric, usually short, the throat with one or two series of usually fimbriated scales; stamens at the top of the tube; filaments short, dilated. Leaves opposite, penniveined. The best-known species are here described. They thrive in a mixture of peat, loam, and sand. Cuttings root readily if inserted in sand, in heat.

W. coccinea (scarlet).* *fl.* dark red, 1in. in diameter; corolla thick, almost fleshy; scales crimson; cymes three or four-flowered. July. *l.* elliptic or elliptic-lanceolate, 3in. to 5in. long, membranous, obtusely caudate-acuminate, acute at base; petioles very short. *h.* 12ft. and upwards. India, 1822. A glabrous or pubescent tree. (B. M. 2696.) SYN. *Nerium coccineum* (L. B. C. 894).

W. dubia (doubtful). *fl.*, corolla lobes yellow outside, orange-red within, ten lines long, spreading, acuminate; pedicels rather shorter than the flowers; cymes three-flowered, glabrous. June. *l.* ovate-lanceolate, 3in. to 4in. long, glabrous, slightly undulated, rather obtusely acuminate. Native country uncertain, 1813. Shrub. SYN. *Cameraria dubia* (B. M. 1646).

W. pubescens (downy). *fl.* white, sessile or shortly pedicellate; cymes terminal, trichotomous, corymbose, not exceeding the leaves; corolla tube scarcely exceeding the calyx, the lobes twice as long. March. *l.* shortly petiolate, ovate to elliptic-oblong, acuminate, 2in. to 4in. long. North Australia, 1829. A pubescent or velvety-tomentose, tall shrub or small tree.

W. tinctoria (dyers'). Pala Indigo-plant. *fl.* white, ½in. to ¾in. in diameter; cymes sometimes 1in. in diameter, with slender, spreading, dichotomous branches. Summer. *l.* elliptic-ovate, elliptic-lanceolate, or obovate-oblong, 3in. to 5in. long, obtusely acuminate or caudate, acute or rounded at base; petioles very short. India, 1812. A small, glabrous tree. (B. F. S. 241; B. R. 933.)

WRIGHTIA (of Roxburgh). A synonym of **Wallichia** (which *see*).

WULFENIA (named in honour of Francis Xavier Wulfen, 1778-1825, a botanical author). ORD. *Scrophulariaceæ.* A small genus (four species) of hardy, glabrous or scarcely pilose, perennial herbs, with a thick rhizome, natives of Carinthia, Western Asia, and the Himalayas. Flowers blue, ebracteolate, nodding, solitary in the axils of the bracts, racemose or spicate at the tops of the scapes; calyx five-parted; corolla tube exserted, cylindrical; limb of four erecto-patent, imbricated lobes, the

Wulfenia—*continued.*

upper one emarginate or bifid, the lower one entire or crenate; stamens two; peduncles scape-like, simple, with a few alternate scales. Leaves sub-radical, petiolate, crenate. The two introduced species are well adapted for the rockery, or for ornamenting well-drained but moist flower borders, being very showy when in blossom. Any light, rich soil is suitable; the protection of a frame in winter is desirable, as the plants are liable to rot if left in the open air at that season. Propagation may be effected by divisions, or by seeds.

W. Amherstiana (Amherst's). *fl.* horizontal; corolla ⅓in. long, with lanceolate, acute lobes; pedicels shorter than the calyx; racemes long, slender, very many-flowered; scapes 5in. to 10in. long, slender. July. *l.* obovate-oblong or obovate-spathulate, 2in. to 5in. long, coarsely crenate or lobulate, narrowed at base and sub-pinnatifid; petioles ½in. to 1½in. long. Himalayas, 1846.

W. carinthiaca (Carinthian).* *fl.*, corolla tube ¼in. long, the limb shorter, the upper segments bifid, the lower sub-crenate; pedicels much shorter than the calyx; raceme dense, spike like, at length elongated; scape 1ft. to 2ft. long, scaly below. July. *l.* oblong or oboval-oblong, doubly-crenate, slightly lobed, narrowed at base; radical ones few, 3in. to 8in. long. Carinthian Alps, 1817. (B. M. 2500; S. B. F. G. 66.)

WULFFIA (named in honour of John C. Wulff, who died in 1767, author of "Flora Borussica"). SYNS. *Chakiatella, Chylodia, Tilesia.* ORD. *Compositæ.* A small genus (eight species have been described, but all are not distinct as such) of tropical American, stove, scabrous-pubescent, perennial herbs. Flower-heads yellow, at first depressed, at length globose, pedunculate, solitary or three to seven in a corymb; involucre hemispherical, with two or three series of bracts; receptacle slightly convex, the pales enveloping the florets; ray florets, when present, entire or minutely toothed; achenes glabrous or slightly pilose. Leaves opposite, petiolate, crenate-serrated. *W. maculata*, the only species introduced, is of easy culture in any light soil. Propagation may be effected by seeds, or by divisions.

W. maculata (spotted). *fl.-heads* orange-yellow; ray florets about eight, twice as long as the involucre; peduncles ternate, terminal. June. *l.* oblong-lanceolate, cuneate at base, acuminate at apex, serrated, scabrous above, nearly glabrous beneath. Stem erect, tetragonal, spotted. *h.* 3ft. Brazil, 1822. SYN. *Gymnolomia maculatum* (B. R. 662).

WULLSCHLÆGELIA (named after Herr Bischoff Wullschlægel, who collected *W. aphylla* in Jamaica). ORD. *Orchideæ.* A small genus (two species) of stove, terrestrial, leafless Orchids, found in the West Indies and Brazil. Flowers very small, in loose, sub-sessile spikes; lip sessile at the base of the column, erect, concave, the base produced in a pouch or spur. Stems simple, with a few small scales. The species are of no horticultural value.

WURMBEA (named in honour of F. van Wurmb, Secretary to the Academy of Sciences at Batavia). ORD. *Liliaceæ.* A genus consisting of seven species of greenhouse plants, with tunicated bulbs or corms, natives of South Africa and Australia. Flowers ebracteate, sub-sessile, in a short, terminal, pedunculate spike; perianth sub-campanulate or expanded nearly from the base, persistent, the lobes longer than the tube, sub-equal, spreading; stamens six. Leaves few, linear- or rarely ovate-lanceolate, continuous with the sheaths. *P. campanulata* and its varieties, the only plants calling for description here, are pretty subjects when in flower. They thrive in a compost of sandy peat and a little loam. Propagation may be easily effected by seeds, or by offsets.

W. campanulata (bell-shaped). *fl.*, perianth pallid, 4in. to 6in. long, the tube campanulate, the segments lanceolate, acute, black-glandular above the base; spikes 1in. to 3in. long, loose- or dense-flowered. May and June. *l.* three or four, firm; lower ones linear, 3in. to 9in. long; upper ones lanceolate, dilated at base, embracing the stem. Bulb ovoid; tunic brown. *h.* 6in. to 12in. South Africa, 1819. SYN. *Melanthium monopetalum* (B. M. 1291). *W. purpurea* (A. B. R. 221; B. M. 694) is regarded, by Baker, as a form of this species; it has a lurid-purple perianth, the segments equalling or exceeding the campanulate tube.

Wurmbea—*continued.*

W. c. longiflora (long-flowered). *fl.*, perianth pale, ½in. to ¾in. long, the segments equalling or shorter than the cylindrical tube. 1788. A robust variety. *W. pumila* is a dwarf form of this, with three or four flowers in a spike, and linear leaves.

W. pumila (dwarf). A form of *W. campanulata longiflora.*

W. purpurea (purple). A form of *W. campanulata.*

WÜRTHIA. A synonym of **Ixia** (which *see*).

WYCH ELM. *See* **Ulmus glabra** and **U. montana.**

WYETHIA (so called after N. B. Wyeth, the discoverer of this genus in the mountains of North America). SYN. *Alarconia, Melarhiza.* ORD. *Compositæ.* A genus of seven species of hardy, perennial, North American herbs, with a thick caudex. Flower-heads yellow, large, heterogamous, radiate; involucre hemispherical, the bracts in two or three series, scarcely unequal; receptacle flat or slightly convex; ray florets ligulate, spreading; disk florets shortly five-cleft at apex; achenes glabrous. Leaves radical or alternate, entire. Stem often simple and one-headed. Only one species calls for mention here. For culture, *see* **Helianthus.**

W. angustifolia (narrow-leaved). *fl.-heads* yellow, solitary; scales of involucre mostly foliaceous, lanceolate or broader, equalling the disk; involucre fully 1in. high, loose or spreading; rays numerous, 1½in. long. Autumn. *l.*, radical ones stalked, elongated-lanceolate, tapering to both ends, occasionally dentate or serrate, often undulate; cauline ones sessile, broader. *h.* 6in. to 2ft. United States.

WYMOT. An old name for Marsh Mallow (*Althæa*).

XANTHISMA (from *xanthisma*, yellowness; alluding to the colour of the flowers). SYN. *Centauridium.* ORD. *Compositæ.* A monotypic genus. The species is a hardy, annual or biennial herb. Seeds should be sown in the open border, during April.

X. texanum (Texan). *fl.-heads* wholly yellow, heterogamous, mediocre, solitary, at the tips of the branches; involucre broadly campanulate, or at length sub-globose, the imbricated bracts in several series; receptacle flat, strongly fimbrilliferous; achenes glabrous; pappus reddish, shining. Summer. *l.* alternate, linear-lanceolate, entire, pale, erect, sessile, about 1in. long. *h.* 1½ft. to 2½ft. Texas, 1877. (B. M. 6275.)

XANTHIUM (the old Greek name used by Dioscorides, from *xanthos*, yellow; the plants were formerly used by the Greeks for dyeing hair). Cockle Bur; Clot Bur. ORD. *Compositæ.* A genus consisting of about four species of hardy, annual herbs, dispersed over warm and temperate regions. Flower-heads solitary or glomerate at the axils, unisexual. Leaves alternate, lobed or toothed. The species are of no horticultural value. *X. spinosum* (Bathurst Bur; Spiny Clot-Bur) and *X. strumarium* (Ditch or Louse Bur; Small Burdock) are casual weeds in Britain.

XANTHOCEPHALUM (from *xanthos*, yellow, and *cephale*, a head; alluding to the yellow flower-heads). SYN. *Xanthocoma.* ORD. *Compositæ.* A genus consisting of eight species of greenhouse or hardy herbs or sub-shrubs; one is found in Ecuador, and the rest are Mexican. Flower-heads wholly yellow, rather large or mediocre, solitary or loosely corymbose at the tips of the branches, heterogamous; involucre hemispherical or broadly campanulate, the imbricated bracts in several series; receptacle flat, foveolate; ray florets ligulate, spreading, nearly entire; disk florets five-cleft at apex; achenes glabrous. Leaves alternate, narrow, entire or toothed. Only two species call for mention here. Both thrive in any fairly good soil. *X. centauroides* may be increased by cuttings, and *X. gymnospermoides* by divisions.

X. centauroides (Centaurea-like). *fl.-heads* yellow, solitary involucre clammy; outer scales spreading. July to September. *l.* sessile, thickish, linear, pinnatifidly toothed, wrinkled, glabrous. *h.* 1½ft. Mexico, 1826. Greenhouse sub-shrub. SYN. *Grindelia coronopifolia.*

Xanthocephalum—*continued.*

FIG. 230. INFLORESCENCE OF XANTHOCEPHALUM GYMNOSPERMOIDES.

X. gymnospermoides (Gymnosperma-like).* *fl.-heads* orange-yellow, about 1in. in diameter, corymbose. September. *l.* 3in. to 6in. long, lanceolate, linear, and small above, the lower ones sub-spathulate and serrated towards the point, the rest entire. *h.* 2ft. to 4ft. New Mexico, 1859. Hardy perennial. See Fig. 230. SYN. *Gutierrezia gymnospermoides* (B. M. 5155).

FIG. 231. FRUITS OF XANTHOCERAS SORBIFOLIA.

XANTHOCERAS (from *xanthos*, yellow, and *keras*, a horn; alluding to the yellow, horn-like glands or nectaries between the petals). ORD. *Sapindaceæ*. A monotypic genus. The species is a small, hardy tree, thriving in any light garden soil. It is difficult to propagate in any other way than from seeds; but root-cuttings sometimes succeed.

X. sorbifolia (Sorbus-leaved). *fl.* white, with blood-red streaks at the base, large, regular, polygamous; sepals five, equal, boat-shaped, imbricated; petals five, elongated, clawed, without scales; disk cup-like; stamens eight; pedicels long, bracteate at base; racemes simple, terminal. *fr.* three-celled, the size of an apple. *l.* alternate, exstipulate, imparipinnate; leaflets serrated. *h.* 5ft. to 15ft. China, 1870. See Fig. 231. (B. M. 6923; F. d. S. 1899; G. C. n. s., v., p. 565, and xxvi., p. 205; I. H. 1877, 295; R. H. 1872, p. 291.)

FIG. 232. XANTHOCHYMUS PICTORIUS.

XANTHOCHYMUS (from *xanthos*, yellow, and *chymos*, juice; the plants contain an abundance of yellow juice). SYN. *Stalagmites*. ORD. *Guttiferæ*. A small genus (four species) of stove trees, with the habit of *Garcinia* (under which *Xanthochymus* is included by Sir J. D. Hooker, in his "Flora of British India"), inhabiting tropical Asia and Africa, and Madagascar. Sepals and petals five, very rarely four; filaments connate in five, rarely four, erect, distant, pedicellate, spathulate bodies. Berry indehiscent. Three of the species have been introduced. They thrive in a compost of loam and

Xanthochymus—*continued.*

peat; and may be propagated by cuttings of ripened shoots, inserted in sand, under a glass, in strong bottom heat.

X. dulcis (sweet-fruited). *fl.* cream-white, in fascicles; petals conniving in a globular form; peduncles scarcely longer than the flowers. February. *fr.* bright yellow, smooth, the size of an apple, with copious yellow pulp, palatable and good. *l.* opposite, 6in. or more long, oblong, acuminate, coriaceous, entire, bright glossy green, paler beneath. *h.* 20ft. Molucca Islands, 1820. (B. M. 3088.)

X. ovalifolius (oval-leaved). *fl.* white, ⅛in. to ¼in. in diameter, the males and females often mixed in one fascicle, but usually the females are fascicled and the males spiked. Summer. *fr.* deep green, the size of a walnut. *l.* sub-orbicular to lanceolate, obtuse, 3¼in. to 8½in. long. India. A middling-sized tree. SYN. *Garcinia ovalifolia.*

X. pictorius (painter's).* *fl.* white; males ⅜in. in diameter, in four to eight-flowered fascicles from the axils of fallen leaves; hermaphrodite ones like the males. Summer. *fr.* dark yellow, the size of an apple, globose, pointed. *l.* linear-oblong or oblong-lanceolate, 9in. to 18in. long, coriaceous, shining, reticulated. Trunk straight. *h.* 40ft. India. This tree yields a large quantity of indifferent gamboge. See Fig. 232. (B. F. S. 88; R. H. 1881, p. 13.) SYN. *Garcinia Xanthochymus.*

XANTHOCOMA. A synonym of **Xanthocephalum** (which *see*).

XANTHOCROMYON. A synonym of **Trimezia** (which *see*).

XANTHORHIZA (from *xanthos*, yellow, and *rhiza*, a root; alluding to the bright yellow colour of the long roots and rootstock). SYN. *Zanthorhiza.* ORD. *Ranunculaceæ.* A monotypic genus. The species is a hardy, dwarf shrub or under-shrub. It thrives in common garden soil, and may be increased by suckers.

X. apiifolia (Apium-leaved). *fl.* dark purple, small, often polygamous, in slender, compound racemes, appearing before (and under) the leaves; sepals five, petaloid; petals five, small, clawed, often dilated at apex. March and April. *l.* pinnate, long-petiolate; leaflets three to five, ovate and lanceolate-ovate, incisely lobed and toothed from near the acute base. Stems 2ft. to 3ft. high. North America, 1766. (B. M. 1736; B. M. Pl. 9.)

XANTHORRHŒA (from *xanthos*, yellow, and *rheo*, to flow; referring to the resinous juice extracted from the plants). Black Boy; Grass Gum-tree; Grass-tree. ORD. *Juncaceæ.* A genus embracing eleven species of greenhouse, long-lived perennials, with a thick, woody caudex, all natives of Australia. Perianth persistent, of six distinct segments; stamens six; scape or peduncle terminal, hard, often several feet long, terminating in a dense, cylindrical spike of numerous sub-sessile flowers, closely packed with numerous bracteoles surrounding each flower within a small or subulate, subtending bract. Leaves in a dense tuft at the top of the caudex, long-linear, brittle, spreading or recurved, their broader, closely imbricated bases remaining long persistent. Caudex of several species emitting a copious, dark or yellow, resinous gum (the former kind called Black-boy Gum, and the latter Botany Bay or Acaroid Resin). Some of these plants form conspicuous features in Australian landscapes. Those best known to cultivation are here described; all have white flowers, appearing in spring. They thrive in a compost of peat and loam, and may be increased by offsets.

X. arborea (tree-like). Botany Bay Gum. *fl.*, perianth segments about ⅛in. long, three-nerved: spike 3ft. to 4ft. long, 1in. to 1¼in. in diameter; scape 5ft. to 6ft. long April. *l.* flat or triquetrous, 3ft. to 4ft. long, two or three lines broad. Caudex attaining several feet in height, with a diameter of 6in. to 9in.

X. australis (Southern). *fl.*, spike, when full grown, upwards of 2ft. long, nearly 1½in. in diameter; scape usually about 2ft. high. Summer. *l.* about 2ft. long, one line or rather more broad, somewhat flat, but with the dorsal angle, and sometimes also the facial one, prominent. Caudex elongated, but rarely exceeding 2ft. in height. 1824.

X. bracteata (conspicuous-bracted). *fl.*, spike usually 4in. to 6in. long, ¼in. or sometimes ⅜in. in diameter; subtending bracts subulate and very conspicuous in the young spike; scape 2ft. to 3ft. high. Summer. *l.* about 2ft. long, one line or rather more broad, concave above, the dorsal angle slightly projecting in the lower part, tapering upwards into a narrow, triquetrous point. Caudex very short. 1810.

Xanthorrhœa—*continued.*

X. hastilis (spear-like). *fl.*, spike 1½ft. to 2ft. long, a dense, rusty tomentum covering the ends of the bracts and outer perianth segments; scape often 6ft. to 8ft. long below the spike. *l.* 3ft. to 4ft. long, two to three lines broad, flat in front, but with the dorsal angle more or less prominent. Caudex very short, or often scarcely prominent. 1803. (B. M. 4722; F. d. S. 868.)

X. minor (lesser). *fl.*, spike 3in. to 6in., rarely 7in. or even 8in., long, seven to eight lines in diameter when fully out; scape, when full grown, often longer than the leaves. *l.* crowded on the caudex, 1ft. to 2ft. long, one to nearly two lines broad, flat but thick, or more or less triquetrous. Caudex short and thick. 1804. (B. M. 6297.)

X. Preissii (Preiss').* *fl.*, perianth segments about ¼in. long, the outer ones oblong, the inner ones broader; spike 1in. in diameter; scape 2ft. to 6ft. long (including the spike, which occupies half to nearly the whole length). April. *l.* from a short, flat base, 2ft. to 4ft. long, one to two lines broad, rigid, very brittle when young. Caudex thick and simple, short, or attaining 5ft. to 6ft. (sometimes, according to Oldfield, as much as 15ft.). (B. M. 6933.)

X. quadrangulata (quadrangular). *fl.*, spike 3ft. to 4ft. long, 1½in. in diameter when in flower; scape as long, or longer. *l.* slender but rigid, 1½ft. long, strictly quadrangular, though sometimes slightly flattened, rarely above one line broad. Caudex lengthening out to several feet. 1874. (B. M. 6075.)

XANTHOS. This term, used in Greek compounds, signifies such yellow as gamboge; *e.g.* Xanthophyll, the yellow colouring matter of plants.

XANTHOSIA (from *xanthos*, yellow; alluding to the yellow down with which some of the species are covered). SYN. *Leucolæna.* ORD. *Umbelliferæ.* A genus comprising seventeen species of greenhouse herbs or small shrubs, diffuse or decumbent at the base, or erect, often clothed with long, soft hairs, mixed with a stellate tomentum, natives of Australia. Calyx lobes peltate, cordate, or not attached by the whole of the base; petals with an induplicate point and reduplicate margins; umbels usually compound, the partial ones with two or three bracts, and several almost sessile flowers, the general one of three or four rays, and as many bracts, but sometimes the whole umbel reduced to very few, or to a single flower. Leaves toothed, lobed, or ternately divided. The two species introduced require similar treatment to **Trachymene** (which *see*).

X. hirsuta (hairy). A synonym of *X. pilosa.*

X. montana (mountain-loving). A synonym of *X. pilosa.*

X. pilosa (pilose), *fl.* white; peduncles usually two at the nodes, each usually with two flowers, more rarely three or only one, with two or three short, narrow bracts forming a general involucre at the base of the short pedicels or rays. June. *l.* coarsely sinuate-toothed, three or five-lobed or rarely three-parted, the central lobe always longer than the lateral ones, rarely exceeding 1in. in length. *h.* 1ft. to 2ft. 1826. An erect, or more frequently diffuse or procumbent shrub. SYNS. *X. hirsuta, X. montana.*

X. rotundifolia (round-leaved).* *fl.* white, rather numerous, on very short pedicels; peduncles long, each bearing a rather large, compound umbel; rays usually four, with a sessile umbellule in the centre: involucral bracts petal-like. June. *l.* shortly petiolate, nearly orbicular, irregularly and acutely toothed, ⅜in. in diameter, glabrous or woolly beneath, especially when young. Stems erect, 1ft. to 2ft. high, often woody at base. 1836. (B. M. 3582.)

XANTHOSOMA (from *xanthos*, yellow, and *soma*, a body; alluding to the large, lobed, depressed, yellow stigma). Including *Acontias* and *Phyllotænium.* ORD. *Aroideæ* (*Araceæ*) A genus consisting of about twenty-five species of stove, milky, perennial herbs, inhabiting tropical America. Flowers monœcious, the imperfect males between the perfect ones and the females; spathe tube oblong or ovoid, convolute, accrescent, persistent, at length bursting irregularly, the throat constricted, the lamina boat-shaped; spadix inappendiculate, shorter than the spathe, and adnate with it at base; male inflorescence cylindrical or clavate, elongated, the imperfect

Xanthosoma—*continued.*

portion constricted; female shorter, dense-flowered, attenuated above; peduncles one or several, rarely elongated. Leaves sagittate, hastate, or pedatisect, on long

FIG. 233. XANTHOSOMA BARILLETI.

and thick petioles. The best-known species are here described. They thrive in any rich, light, well-drained soil. Propagation is effected by cutting up the stem or rootstock into small portions, and planting these in light soil, or in cocoa fibre, in bottom heat. After a stem has been cut off, a large number of shoots are developed, which strike readily when submitted to the same treatment as that recommended for root-cuttings. Some of the species may be used for sub-tropical work: they should have a sheltered place in a well-drained bed, principally made up of leaf mould, and an abundance of water.

X. auriculatum (eared). *fl.*, spathe greenish outside, white within, 8in. long, the tube ovoid-oblong, the lamina oblong-lanceolate, acuminate; spadix as long as the spathe. *l.* three-lobed, cordate-hastate; middle lobe oblong, acuminate, cuspidate; basal lobes recurved, spreading, oblong or ovate-oblong, twice or thrice as long as the middle lobe; petioles reddish, or green and rufous-striolated or variegated. Brazil, 1869. (R. G. 1869, 603.)

X. Barilleti (Barillet's).* *l.* arranged on a robust petiole attaining 3ft. in length, deeply channelled at its base, which is broadly winged, the whole of a beautiful shining green; blade digitately-palmate, divisions entire, unequal, strongly nerved, the median lobe 1ft. to 1½ft. long, of a dull green. Brazil, 1882. Plant caulescent. See Fig. 233. (R. H. 1882, p. 260.)

X. belophyllum (arrow-leaved). *fl.*, spathe 8in. long, the tube greenish-white within, the lamina pale yellow, acuminate; spadix whitish, much shorter than the spathe. *l.* large, opaque and slightly pruinose above, cinereous or often pale greenish beneath, 1½ft. to 2ft. long, cordate-hastate; middle lobe shortly apiculate: basal ones semi-ovate, slightly acute. Stem short and thick. Venezuela and Guiana.

X. helleborifolium (Hellebore-leaved). *fl.*, spathe 3½in. to 4½in. long, the tube green, ovoid, nearly glabrous, the lamina yellowish-green, oblong-lanceolate, shortly cuspidate; spadix 5in. long; peduncles equalling or slightly exceeding the petioles. *l.* on very long petioles, green, spotted and striated with dark violet, reniform, pedatisect, 8in. to 12in. broad; segments five, nine, eleven, or thirteen, distant, the lateral ones unequally oblong or lanceolate, cuneate towards the base, acuminate at apex, gradually smaller. *h.* 1½ft. to 2ft. Venezuela, &c., 1793. SYNS. *Acontias helleborifolius*, *Arum helleborifolium*.

X. Jacquini (Jacquin's). *fl.*, spathe tube green outside, dark purple within, 2¾in. long, the lamina pale greenish-yellow outside, whitish within, about 4in. long; spadix whitish, sessile, about equalling the spathe; peduncles about 4in. long, nearly ½in. thick. *l.* on long petioles, broadly cordate-sagittate, 1¼ft. to 2ft. long; middle lobes rounded at apex, shortly apiculate; basal ones retrorse, obtuse, half as long as the middle one. Stem thick, about 2ft. high. Venezuela, 1816.

X. Lindeni (Linden's).* *l.* hastate-oblong, 1ft. long, glabrous except the midrib, deep green, the midrib and numerous well-

FIG. 234. XANTHOSOMA VIOLACEUM.

Xanthosoma—*continued.*

marked veins ivory-white; middle lobe oblong, acute; basal ones inequilateral, obtuse, extrorse; petioles rather longer than the blades, sheathing one-third their length. Rhizome tuberous. New Grenada, 1871. A showy, variegated plant. SYN. *Phyllotænium Lindeni* (I. H. 1872, 88).

X. maculatum (spotted). *l.* green, sagittate-triangular; petioles purplish, with a glaucous bloom, and margined on the sheathing portion with white. 1861. A bold-habited plant. SYN. *Alocasia albo-violacea.*

X. Maximiliani (Maximilian's). *fl.*, spathe 8in. to 9in. long, the tube glaucous-purple, green at back outside, within and at the throat blood-purple, ovoid, tumid, the lamina straw-coloured outside, sulphur-white within, the base and margins blood-purple; spadix straw-coloured and dirty orange. *l.* triangular-hastate, of a pleasing green; basal lobes broadly rhomboid. Stem tall. *h.* 5ft. Brazil, 1860.

X. mirabile (wonderful). *fl.*, spathe primrose-yellow, 5in. to 6in. long, curved; spadix somewhat stipitate, shorter than the spathe. *l.* green, spotted with yellow, trisected, 10in. to 12in. long; segments ovate-lanceolate, acute, the lateral ones very inequilateral, shorter than the middle one; petioles three or four times as long as the leaves. Rhizome tuberous. South America, 1874. (G. C. 1874, ii., pp. 258, 259.)

X. plumbea (lead-coloured). A synonym of *Alocasia cuprea.*

X. robustum (stout). *fl.*, spathe 8½in. to 10½in. long, the tube green, the lamina whitish, broadly ovate-lanceolate, acute; spadix whitish, rather shorter than the spathe. *l.* opaque above, paler beneath, pruinose, sagittate-ovate, 1½ft. or more long; middle lobe semi-ovate, acutely cuspidulate; basal ones subrhomboid or oblong, obtuse. Stem 4in. to 8in. long, nearly or quite 2in. thick. Mexico.

X. sagittifolium (sagittate-leaved). Arrow-leaved Spoonflower. *fl.*, spathe 6½in. to 7in. long, the tube greenish, the lamina whitish-green; spadix much shorter, and peduncles longer, than the spathe. *l.* 16in. to 20in. long, broadly sagittate-ovate, pruinose; middle lobe broadly semi-ovate, acuminate-apiculate, twice as long as the acute basal ones. Stem thick, erect, 3ft. or more high. West Indies, 1710. (B. M. 4989.)

X. violaceum (violet).* *fl.*, spathe tube glaucous and pale violet outside, yellowish-white within, oblong, 4in. long, the lamina sulphur-white, 6in. long; spadix violet and white, 7½in. long; peduncles 6in. to 8in. long. *l.* pruinose, at length green, paler beneath, 8in. to 16in. long, sagittate-oblong-ovate; middle lobe shortly acuminate-apiculate; basal ones a third or a quarter as long, sub-triangular; petioles brownish-violet, nearly twice as long as the blades. Rhizome short. West Indies, 1864. See Fig. 234.

X. Wallisii (Wallis'). *l.* large, hastate, of a rich dark green; veins white, or nearly so. Antioquia, 1869.

XANTHOXYLUM. *See* **Zanthoxylum.**

XENIATRUM. A synonym of **Clintonia** (which *see*).

XENOCARPUS. A synonym of **Cineraria** (which *see*).

XENOPHONTA. A synonym of **Barnadesia** (which *see*).

XERANDRA. A synonym of **Iresine** (which *see*).

XERANTHEMUM (from *xeros*, dry, and *anthemon*, a blossom; alluding to the dry nature of the flowers, which retain their form and colour for years). Immortelle. SYN. *Harrisonia* (of Necker). ORD. *Compositæ.* A small genus (four or five species) of hardy, erect, branched, hoary, annual herbs, inhabiting the Mediterranean region and the Orient. Flower-heads solitary, long-pedunculate at the tips of the branches, heterogamous, disk-formed; involucre campanulate or oblong-cylindrical; bracts in several series, imbricated, the inner ones pink or whitish (rarely blue?); receptacle flat, with rigid pales; limb of the florets bilabiate. Leaves alternate, narrow, entire. The two best-known species are here described. Seeds only require sowing on a light, rich soil. Several plants formerly included here will now be found under **Helichrysum**, **Helipterum**, and **Phænocoma.**

X. annuum (annual).* *fl.-heads* purple; involucre hemispherical, highly glabrous, the inner bracts much longer, diverging-radiate; florets more than 100. July. *l.* linear or oblong, with revolute margins. *h.* 2ft. South Europe, 1570. (J. F. A. 388.)

X. erectum (erect). A synonym of *X. inapertum.*

X. inapertum (not open). *fl.-heads* white; involucre ovoid-oblong, highly glabrous, the inner bracts a trifle longer, scarcely radiating; florets thirty to forty. June. *l.* linear or oblong, with revolute margins. *h.* 2ft. South Europe and Persia, 1836. SYN. *X. erectum.*

XERONEMA (from *xeros*, dry, and *nema*, a thread; the filaments dry and persist). SYN. *Scleronema.* ORD. *Liliaceæ.* A monotypic genus. The species is an interesting and elegant, stove perennial, with a very short rhizome and fascicled root-fibres. It thrives in a compost of rich, sandy loam and leaf mould. Propagation may be effected by seeds, or by division of the rootstock.

X. Moorei (Moore's). *fl.* clustered, erect, shortly pedicellate; perianth bright crimson, ½in. to ¾in. long, persistent, the segments distinct, linear, erect, sub-equal; stamens six, exserted; raceme terminal, simple, secund, the rachis abruptly inflexed at base, often horizontal. *l.* clustered at the base of the stem, 12in. to 16in. long, erect. Stem erect, simple, about 20in. long, with a few reduced leaves. New Caledonia, 1878. (G. C. n. s., x., p. 17; I. H. 1877, 297.)

XEROPHYLLUM (from *xeros*, dry, and *phyllon*, a leaf; alluding to the dry, Grass-like leaves). ORD. *Liliaceæ.* According to Baker, a monotypic genus. The species is a handsome, hardy, perennial herb. It succeeds in a peat border, and will, if treated with care, ripen seeds, by which means, and by division of the roots, the plant may be propagated.

FIG. 235. XEROPHYLLUM ASPHODELOIDES, showing Habit and detached Single Flower.

X. asphodeloides (Asphodel-like).* Turkey's Beard. *fl.*, perianth whitish, six-parted, ¼in. long, the segments spreading, many-nerved at back; stamens six, hypogynous, rather shorter than the perianth; pedicels ascending, solitary, not jointed, 1in. to 1½in. long; raceme dense, 4in. to 6in. long, 2in. to 3in. broad. May. *l.* radical, in a very dense rosette, subulate, persistent, 1ft. to 1½ft. long, one line broad, reclined, rough on the margins, remarkably dry and rigid. Stem 1ft. to 2ft. high, its leaves reduced to bristle-like bracts. Rhizome thick. North America, 1765. See Fig. 235. (G. C. n. s., xiii., p. 433.) SYNS. *X. setifolium* (B. R. 1613), *Helonias asphodeloides* (B. M. 748).

X. a. tenax (tenacious). *fl.* rather larger; stamens equalling or exceeding the perianth. *l.* ⅛in. to ¼in. broad. 1811.

X. setifolium (bristle-leaved). A synonym of *X. asphodeloides.*

XEROPHYTA. A synonym of **Vellozia** (which *see*).

XEROTES (from *xerotes*, dryness; alluding to the arid herbage). SYN. *Lomandra.* ORD. *Juncaceæ.* A genus comprising thirty species of greenhouse, perennial or rarely annual, rigid herbs, natives of Australia, one species being also found in New Caledonia. Flowers small, the males usually either in dense clusters or solitary along the branches of a panicle, sessile or pedicellate within short, scarious bracts; female inflorescences either similar to the males, or less branched, or reduced to single, sessile, globular heads, or rarely both sexes in dense, globular or oblong heads, along a simple rachis, or connected into a long, dense, cylindrical spike; scapes or peduncles short, or the inflorescence sessile in the tufts of radical leaves or at the ends of the leafy stems,

VIBURNUM PLICATUM TOMENTOSUM

Xerotes—*continued.*

or more or less elongated below the inflorescence. Stems tufted. Only two species call for description in this work. Both are perennials, thriving in light, rich soil. They may be increased by division of the root.

X. longifolia (long-leaved). Australian Tussock Grass. *fl.* greenish-white; clusters dense, sessile along the rachis at the bases and ends of the branches; whole inflorescence 6in. to nearly 12in. long; scape 1ft. to nearly 2ft. high, much flattened below the panicle. June. *l.* radical or nearly so, 1ft. to 2ft. long, one to three lines broad, flat or concave, with a short, sheathing base, mostly two-toothed at apex. *h.* 3ft. 1798. (B. R. 1839, 3.)

X. rigida (rigid). *fl.* greenish-white, sessile in sessile clusters; inflorescence 1½in. to 2in. long, shortly branched at base; male scapes from some of the lower axils flat and broad, 1½in. to 2in. long. June. *l.* thick and rigid, less than 1ft. long, 2in. to 2½in. wide, spreading, obtuse, truncate, or two-toothed at apex, the short sheaths covering the base of the stem. Leafy stem shortly developed, rather thick, terminating a creeping rhizome. 1791. (L. B. C. 798.)

XIMENESIA. Included under **Verbesina** (which *see*).

XIMENIA (named after Francis Ximenes, a Spanish monk, who wrote a work on Mexican plants in 1615). SYN. *Heymassoli.* ORD. *Olacineæ.* A small genus (four species are known) of stove or greenhouse, glabrous or tomentose trees or shrubs; one is Mexican, another South African, a third inhabits the South Pacific Islands, and the fourth is broadly dispersed through the tropics. Flowers whitish, large for the order, in short, axillary cymes, or rarely solitary; calyx small, four or five-toothed or lobed; petals four or five, hypogynous; stamens eight or ten. Drupes ovoid or globose; flesh pulpy. Leaves alternate, entire, sub-coriaceous, often fascicled. The drupes of *X. americana* have a sweet, aromatic flavour, but are a little rough to the palate. This species thrives in a compost of loam and peat. Cuttings will readily root in sand, under a glass, in heat.

X. americana (American). False Sandalwood; Hog, Mountain, or Seaside Plum. *fl.* odorous, racemose or corymbose; petals four, oblong, villous internally, many times longer than the calyx. April. *fr.* oval or oblong, edible. *l.* 1¼in. by 1in. and upwards, glabrous, ovate-oblong or roundish, emarginate, rounded at base. Branches covered with astringent bark, often ending in a spine. *h.* 20ft. Tropics, 1759. Stove tree.

XIPHIDIUM (from *xiphos*, a sword, and *eides*, likeness; alluding to the shape of the leaves). ORD. *Hæmodoraceæ.* A genus consisting of two species (perhaps varieties of one) of stove, perennial herbs, with short rhizomes, natives of tropical America. Flowers rather small, glabrous, shortly pedicellate at the sides of the simple panicle branches, unilateral; perianth tube none, the segments equal, oblong, spreading, not decurrent at base; stamens three, affixed at the base of the inner segments. Leaves rather broadly linear or long-lanceolate, distichous, membranous, equitant. *X. floribundum* thrives in an equal mixture of loam, peat, and sand. It may be readily increased by division of the roots.

X. albidum (whitish). A synonym of *X. floribundum.*

X. floribundum (bundle-flowered). *fl.* white or blue, eight to ten along the branches of the panicle; perianth segments ¾in. long, oblong-lanceolate, glabrescent; panicle pubescent. May and June. *l.* oblong-lanceolate or oblong, 1in. to 2in. broad, acuminate, often distinctly muricated at the edges, glabrous. *h.* 1ft. to 2ft. West Indies, 1856. (B. M. 5055.) SYN. *X. albidum. X. giganteum* is a very broad-leaved form, with entire margins.

XIPHION. Included under **Iris** (which *see*).

XIPHOPTERIS. Included under *Polypodium.*

XYLOBIUM (from *xylon*, wood, and *bios*, life; in allusion to the substance on which the plants grow). ORD. *Orchideæ.* A genus comprising about sixteen species of stove, epiphytal, tropical American Orchids, closely allied to *Maxillaria.* Flowers racemose, very shortly pedicellate; sepals erect, at length somewhat spreading, the lateral ones broader than the upper one,

Xylobium—*continued.*

adnate at base to the foot of the column, forming a chin; petals similar to the upper sepal, but smaller; lip sub-articulated with the foot of the column, sessile or contracted and incumbent at base, at length erect, the lateral lobes erect, clothing the erect, semi-terete column, the middle one short, broad, spreading; scapes at the bases of the pseudo-bulbs, erect, simple. Leaves ample or elongated, plicate-veined, contracted into the petioles. Stems short, many-sheathed, mostly thickened into a one or two-leaved, fleshy pseudo-bulb. The best-known species are here described. For culture, *see* **Maxillaria** (under which the species were formerly classed).

X. concavum (concave-lipped). *fl.* pale yellow; lateral sepals falcate, acuminate; petals half as large as the sepals; lip almost truncate, concave, bluntly three-lobed, the middle lobe somewhat fleshy and tuberculated at the edge, rose-veined, with a long, narrow ridge in the middle, three-lobed at the point. *l.* twin, three-ribbed, shining, narrowed into the petioles. Pseudo-bulbs oblong, deeply furrowed. *h.* 9in. Guatemala, 1844. SYN. *Maxillaria concava* (L. & P. F. G. ii., p. 53).

X. decolor (discoloured). *fl.*, sepals and petals sulphur-coloured, the former ovate-oblong, obtuse, spreading, the latter half as large, connivent; lip whitish, obsoletely three-lobed, obtuse, hooded, with five elevated, parallel calli; scapes radical, many-flowered. *l.* solitary, oblong-lanceolate, acuminate at both ends, 1ft. to 1¼ft. long. Pseudo-bulbs oblong, compressed. *h.* 1ft. Jamaica, 1830. SYN. *Maxillaria decolor* (B. M. 3981; B. R. 1549).

X. elongatum (elongated). *fl.* in a dense, oblong raceme; sepals and petals pale, linear, acuminate; lip purplish-brown, warted, ovate-oblong, very fleshy; scapes erect, two-sheathed *l.* lanceolate, three-ribbed, about twice as long as the elongated, cylindrical pseudo-bulbs. *h.* 1ft. Central America, 1847. SYN. *Maxillaria elongata* (L. & P. F. G. iii., p. 69.)

X. foveatum (foveate). *fl.* of a pale, uniform straw-colour, faintly scented; sepals and petals linear-oblong; lip three-lobed at apex, the middle lobe rounded, fleshy, excavated. *l.* lanceolate, undulated, thrice as long as the raceme. *h.* 1ft. Demerara, 1839. Allied to *X. squalens.* SYN. *Maxillaria foveata.*

X. pallidiflorum (pale-flowered). *fl.* pedicellate; sepals and petals pale sulphur-coloured, one-ribbed, the lower sepals broadly falcate; lip whitish at back, reflexed above, somewhat truncate-emarginate at apex; racemes erect, three to seven-flowered. *l.* oblong, acuminate, glabrous, 8in. to 10in. long, three-ribbed, arcuate-recurved, attenuated into the petioles. Pseudo-bulbs densely aggregated, cylindrical, 6in. to 7in. long. *h.* 1ft. Venezuela, 1826. SYN. *Maxillaria pallidiflora* (B. M. 2806).

X. squalens (squalid). *fl.* pale, dingy yellowish-flesh-coloured, numerous, in a dense, thyrsiform raceme; two of the petals and the three-lobed lip streaked with purple, the side lobe of the lip deep purple; scape 4in. to 6in. high, brown-scaly. *l.* two to a pseudo-bulb, 8in. to 12in. long, tapering into footstalks, strongly five-ribbed. Pseudo-bulbs several, oblong, dark green, sheathed with brown scales. Brazil, 1828. SYNS. *Maxillaria squalens* (B. M. 2955), *Dendrobium squalens* (B. R. 732).

XYLOMELUM (from *xylon*, wood, and *melon*, an apple; alluding to the woody fruit). ORD. *Proteaceæ.* A small genus (four species) of greenhouse trees or tall shrubs, endemic in Australia. Flowers sessile in pairs within each bract, disposed in opposite, dense spikes; perianth regular, with revolute segments; bracts small. Fruit large, ovoid or tapering above the middle, very thick and woody, tardily opening along the upper side, or in two valves. Leaves opposite, entire or prickly-toothed. The fruits are known in Australia as Wooden Pears. Only one species has been introduced. It thrives in a compost of sandy peat and fibry loam. Ample drainage must be given. Propagated by cuttings of young and rather firm shoots; or by seeds, sown in slight heat.

X. pyriforme (pear-fruited). *fl.*, spikes very dense, 2in. to 3in. long, usually clustered three to six together, at first appearing terminal, but soon becoming lateral. *fr.* 2½in. to 3in. long, above 1in. in diameter near the base, tapering above the middle. *l.* of the flowering branches entire, lanceolate or ovate-lanceolate, very acute, 4in. to 6in. long; those of flowerless branches or young shoots often sinuate and prickly-toothed, attaining 8in. in length. 1869. A moderate-sized tree.

XYLOPHYLLA. Included under **Phyllanthus** (which *see*).

XYLOPIA (abridged from *xylopicron*, which is from *xylon*, wood, and *pikros*, bitter; the wood of some of the species is intensely bitter). Bitter Wood. ORD. *Anonaceæ.* A genus comprising nearly thirty species of

Xylopia—*continued.*

leafy, stove trees or shrubs; five are Indian, six or seven African, and the rest inhabit America. Flowers solitary or fascicled in the axils, sessile or shortly pedicellate; sepals three, more or less connate, valvate; petals six, biseriate, the inner ones included; stamens indefinite. Leaves coriaceous, often distichous. It is doubtful whether the under-mentioned tree is still grown in gardens. A compost of sandy loam and fibry peat, to which is added a small quantity of broken bricks, charcoal, and dried cowdung, is most suitable for its culture. Propagated by cuttings of the hard shoots, inserted in sandy soil, in heat.

X. glabra (smooth). *fl.*, corolla silky; outer petals ⅛in. to ¼in. long; bracteoles somewhat remote from the calyx, deciduous. *l.* lanceolate, taper-pointed, 2in. to 3in. long, downy beneath, clothed with appressed hairs in the younger state. *h.* 20ft. West Indies, Venezuela, and Guiana, 1820.

XYLOSTEUM. Included under **Lonicera** (which *see*).

XYRIDEÆ. A small natural order of perennial or rarely annual, Rush-like or Sedge-like, tufted herbs, broadly dispersed over the warmer regions of the globe, often growing in watery places. Flowers hermaphrodite, scarcely irregular, in terminal, solitary heads of densely imbricating, rigid, scarious, one-flowered bracts; perianth of six segments in two series, the three outer segments calycine, the three inner petaloid; stamens three to six, inserted on the inner perianth segments, three opposite fertile, the others sterile, penicillate, or obsolete; filaments filiform; anthers two-celled. Capsule one-celled, loculidally three-valved, or three-celled and fenestrate at base, operculate above; scapes erect, simple. Leaves radical, rosulate or clustered, linear or rarely linear-lanceolate, sheathing at base, often equitant. Roots fibrous. The leaves and roots of these plants are used in the cure of itch in India and South America. The order embraces two genera—*Abolboda* and *Xyris*—and less than fifty species.

XYRIS (an old Greek name used by Dioscorides for *Iris fœtidissima*). Yellow-eyed Grass of North America. ORD. *Xyrideæ*. A genus comprising about forty species of stove, greenhouse, or hardy, perennial or rarely annual, Rush-like herbs, broadly dispersed over the warmer regions of the globe. Flower-heads globose, ovoid, or rarely hemispherical or shortly cylindrical; sepals petaloid, very broad, more or less distinctly three-nerved; corolla lobes ovate; staminodes often three. Leaves radical, linear, rigid or Grass-like, tufted or distichous, surrounding the scape. *X. operculata*, the only species worth describing here, thrives in light, rich soil. It may be increased by divisions of the root.

X. operculata (covered). *fl.-heads* ovoid to globular, four to six lines in diameter, the scales black; scapes slender, 1ft. to 1½ft. high, inclosed at base in a rather long sheath without any lamina, in the centre of the tuft of leaves. June. Sheaths shining brown, some of them produced into very narrow, almost subulate leaves, mostly less than 6in. long. Australia, 1804. Stove perennial. (B. M. 1158; L. B. C. 205.)

XYSMALOBIUM (from *xysma*, a fragment, and *lobos*, a division; alluding to the minute divisions of the corona). ORD. *Asclepiadeæ*. A genus consisting of about eight species of stove or greenhouse, perennial herbs, natives of tropical and South Africa. Flowers in umbelliform cymes; calyx five-parted, having five or many glands at the base within; corolla somewhat rotate-campanulate, five-cleft, the lobes reflexed-bearded or naked within; coronal scales five, affixed to the staminal tube. Leaves opposite, broadly lanceolate or linear. *X. padifolium*, the only species known in gardens, requires similar treatment to that recommended for **Gomphocarpus**.

X. padifolium (Cherry-leaved). This is the correct name of the plant described in this work under the name of *Gomphocarpus padifolius*.

YAM. *See* **Dioscorea.**

YANG-MAE-TREE. A common name for **Myrica Nagi** (which *see*).

YARROW. A popular name for **Achillea** (which *see*).

YARROW, SOLDIERS'. A name applied to **Stratiotes aloides** (which *see*).

YATE OR YEIT TREE. A common name for **Eucalyptus cornuta** (which *see*).

YELLOW ARCHANGEL. A name applied to **Lamium Galeobdolon** (which *see*).

YELLOWBY. A common name for **Chrysanthemum segetum** (which *see*).

YELLOW CRESS. A popular name for **Barbarea præcox** (which *see*).

YELLOW ELDER. *See* **Tecoma stans.**

YELLOW EVERLASTING. *See* **Helichrysum arenarium.**

YELLOW-EYED GRASS (of North America). *See* **Xyris.**

YELLOW GARDEN HAWK WEED. *See* **Tolpis barbata.**

YELLOW IRIS. *See* **Iris Pseudo-acorus.**

YELLOW LARKSPUR. *See* **Tropæolum.**

YELLOW RATTLE. *See* **Rhinanthus Crista-galli.**

YELLOW ROCKET. *See* **Barbarea vulgaris.**

YELLOW SLUG (*Limax flavus*). In its habits this Slug differs from the other **Slugs** (which *see*), as it very frequently lives in cellars and other damp places in towns. During the day it lies concealed; but at night it goes in search of its food, and shows itself very partial to cooked articles. Though it prefers potatoes and other vegetables, it will readily eat any kind of meat. The Yellow Slug may also be found in gardens and in woods; and where one occurs, others are seldom far off, as it is gregarious in its habits. It may reach a length of 4in. to 5in., but is usually found of a smaller size. The body is yellowish, spotted with dark brown, and is covered with numerous short, longitudinal ridges. There is a distinct keel on the upper surface of the tail. Other Slugs also are often more or less yellow in colour, but the size, habits, and markings of *L. flavus* will suffice to distinguish it from them. The remedies recommended under **Slugs** are applicable against this species.

YELLOW STAR FLOWER. *See* **Sternbergia lutea.**

YELLOW STAR OF BETHLEHEM. *See* **Gagea lutea.**

YELLOW SULTAN. *See* **Centaurea suaveolens.**

YELLOW UNDERWING. *See* **Tryphæna.**

YELLOW-WEED, DYER'S. *See* **Reseda Luteola.**

YELLOW WOOD. A name applied to *Cladrastis tinctoria*, *Ochrosia borbonica*, several species of *Podocarpus*, &c.

YELLOW-WORT. *See* **Chlora.**

YEVERING BELLS. A common name for **Pyrola secunda** (which *see*).

YEW. *See* **Taxus.**

YEW-BUD GALLS. The buds of the Yew (*Taxus baccata*) are liable to be injured by a Gall Midge, and also by a Gall Mite. The former (*Cecidomyia Taxi*)

Yew-bud Galls –*continued.*

produces a cone-shaped Gall at the tips of the young twigs, composed of crowded, overlapping leaves (see Fig. 236), which remain short, but become broader than the healthy leaves; they are like the latter in colour. The larvæ live between the altered leaves. The Galls are usually of the size figured. They are generally solitary; but two or three may be present at the tip of a twig. The simplest method for preventing harm to the trees from this cause is to pick off the *young* Galls, as this destroys the larvæ.

FIG. 236. MONŒCIOUS BRANCHLET OF YEW (*Taxus baccata*), showing (*g*) Gall of *Cecidomyia Taxi*.

The Gall Mite (*Phytoptus Taxi*) is a much more dangerous foe. It attacks the leaf-buds, and also the male and female flowers, all of which enlarge, and may reach $\frac{1}{5}$in. in diameter, becoming, at the same time, yellow or red. The galled organs are fleshy, and are covered with small, translucent warts. Between them live multitudes of the minute Gall Mites. The Galls remain on the branches all winter, serving for the protection of the Mites. These crawl out the following spring, and produce new Galls in the younger buds. Mr. Andrew Murray was the first to describe these Galls, from examples found by Professor Thistleton Dyer, near London, in 1875. Mr. Murray describes the branches as looking as if frost-bitten. The most effectual—indeed, the only reliable—remedy is to remove the galled branches and burn them, while the Mites are still in the Galls.

YEW-BUD MITE. *See* **Yew-bud Galls.**

YEW, CHINESE. *See* **Podocarpus chinensis.**

YEW, CLUSTER-FLOWERED. *See* **Cephalotaxus.**

YEW GALLS. *See* **Yew-bud Galls.**

YEW, JAPANESE. A common name for **Cephalotaxus pedunculata fastigiata** (which *see*).

YEW, JOINTED. A popular name for **Athrotaxis** (which *see*).

YEW, LORD HARRINGTON'S. *See* **Cephalotaxus pedunculata.**

YEW, PRINCE ALBERT'S. *See* **Saxegothea conspicua.**

YEW, STINKING. *See* **Torreya.**

YOKE ELM. A name applied to **Carpinus Betulus** (which *see*).

YOUTH AND OLD AGE. *See* **Zinnia.**

YOUTHWORT. A common name for **Drosera rotundifolia** (which *see*).

YPONOMEUTA. A form, sometimes used incorrectly, of the name *Hyponomeuta*, a genus of small Moths, whose web-forming larvæ are often destructive to various kinds of garden trees and shrubs. *See* **Hawthorn Caterpillars.**

YUCCA (a native name of the genus). Adam's Needle; Bear's Grass; Spanish Bayonet. ORD. *Liliaceæ.* A genus (comprising, according to Engelmann twelve, according to Baker twenty-one, species) of handsome, stove, greenhouse, or hardy plants, allied to *Dracæna* and *Cordyline;* they inhabit the Southern United States, Mexico, and Central America. Flowers rather large, shortly pedicellate at the sides of the panicle branches, pendulous; perianth segments distinct or scarcely connate near the base, lanceolate-ovate, rather thick, more or less connivent in a globe; stamens six, hypogynous, erect, much shorter than the perianth; filaments rather thick; anthers small, sessile or adnate with the tips of the filaments; panicle terminal, showy, many-flowered, sub-sessile amongst the leaves, or supported on a bracteate peduncle. Fruit sometimes fleshy, pulpy, or nearly spongy, sometimes dry, septicidally or loculidally three-

FIG. 237. POD OF YUCCA.

valved (see Fig. 237). Leaves clustered at the apex of the caudex, linear-lanceolate, thick and rigid or rarely flaccid, usually spinescent at apex, the margins entire or filamentose. Caudex or stem woody, sometimes dwarf, sometimes at length tall and arborescent, branched. All the Yuccas thrive in a rich, light soil, and may be propagated either by divisions, planted in the open ground, or by means of pieces of the thick, fleshy roots, cut into lengths, and inserted in sandy soil, in heat. Seeds of any of the species are rarely, if ever, produced in this country. Many of the plants make noble objects if properly placed and suitably treated. The greenhouse ones may be plunged in their pots, &c., and used for subtropical effects in the open air during the summer months. Except where otherwise indicated, the undermentioned species are hardy.

Most of the descriptions are translated from Mr. Baker's admirable Monograph of *Aloineæ* and *Yuccoideæ*, which appeared in the "Journal of the Linnean Society," vol. xviii.

Yucca—*continued.*

Y. acuminata (taper-pointed), of Sweet. A form of *Y. gloriosa.*

Y. acuminata (taper-pointed), of gardens. A synonym of *Y. flexilis.*

Y. acutifolia (acute-leaved). *fl.* large, pendent, moderately expanded; perianth strongly striated and spotted with dark brown; panicle columnar, about 5ft. high, the flowering branches short and erect. Summer. *l.* sub-erect, stiff, channelled, shortly acuminate, 2½ft. long, bordered by a line of deep red. French gardens, 1869.

Y. agavoides (Agave-like). A garden synonym of *Y. Treculeana.*

Y. albo-spica (white-spiked). A synonym of *Y. constricta.*

Y. aloifolia (Aloe-leaved).* *fl.*, perianth white, 1½in. to 2in. long, the segments oblong or oblong-lanceolate, ½in. to 1in. broad; lower pedicels 1in. to 1½in., upper ones ½in. to ¾in., long; panicle rhomboid, dense, 1ft. to 2ft. long, the branches ascending; peduncle very short. May and June. *l.* fifty to 100 rigid, ensiform, 1ft. to 1½ft. long, 1in. to 1¼in. broad, green,

FIG. 238. YUCCA ANGUSTIFOLIA.

Yucca—*continued.*

FIG. 239. YUCCA ANGUSTIFOLIA STRICTA.

glaucous-tinged, with a pungent, reddish-brown horn at the tip, the margins whitish, serrulated. Stem slender, sometimes 15ft. to 20ft. high, usually simple. West Indies to North Carolina. Greenhouse. (B. M. 1700; P. M. B. iii. 25.) The following, most of which are often classed as species, are regarded, by Baker, as varieties of *Y. aloifolia*: *Atkinsi* and *purpurea*, dwarf, with purplish leaves; *arcuata*, *crenulata*, and *tenuifolia*, small forms, with narrow, more or less arched leaves; *conspicua*, leaves looser, broader, recurved, 1½in. broad; *Draconis* (G. C. 1870, p. 828), leaves looser, longer, recurved; *quadricolor*, leaves reddish-tinged; *tricolor* (= *lineata-lutea*), a common form in gardens, having leaves variegated with white and yellow; *variegata*, leaves with whitish stripes.

Y. angustifolia (narrow-leaved), of Pursh.* *fl.*, perianth greenish outside, campanulate, the segments oblong, acute, 2in. to 2½in. long, ¾in. to 1¼in. broad; pedicels ½in. to 1in. long; raceme terminal, thirty to forty-flowered, sometimes simple, often with a few ascending branches at the base, 3ft. to 4ft. long; peduncle nearly 1ft. long. July. *l.* 100 or more, dense,

Yucca—*continued.*

FIG. 240. YUCCA FILAMENTOSA.

rigid, linear, 1½ft. to 2ft. long, three to four lines broad, channelled above, pungent-pointed, the pale reddish-brown margins copiously filamentose. Missouri, &c., 1811. Plant nearly stemless. See Fig. 238. (B. M. 2236.)

Y. a. stricta (straight). *fl.*, inflorescence more compound; peduncle 2ft. to 3ft. long. *l.* ½in. to ¾in. broad, narrowed at base, less rigid, and less pungent-pointed. Arkansas, 1817. See Fig. 239. (B. M. 2222, under name of *Y. stricta.*)

Y. angustifolia (narrow-leaved), of Carrière. A synonym of *Y. constricta.*

Y. angustifolia (narrow-leaved), of gardens. A synonym of *Y. flexilis.*

Y. antwerpensis (Antwerp). A form of *Y. filamentosa.*

Y. arcuata (arcuate). A form of *Y. aloifolia.*

Y. argospatha (white-spathed). *fl.*, perianth pure white, large; pedicels long and slender; bracts satiny-white, undulated; panicle pyramidal. Summer. *l.* numerous, channelled, 2ft. to

Yucca—*continued.*

2½ft. long, having reddish, finely-denticulate margins, and a sharp, brownish-yellow, spiny point. Stem short. Grenoble Botanic Garden, 1869. Allied to, and perhaps a form of, *Y. Treculeana.*

Y. argyrophylla (silvery-leaved). A synonym of *Furcræa Bedinghausii.*

Y. Atkinsi (Atkins'). A form of *Y. aloifolia.*

Y. baccata (berried). *fl.*, perianth white, 2in. to 3in. long, the segments oblong-lanceolate, ½in. to ¾in. broad; bracts large, lanceolate; inflorescence 5ft. to 6ft. long, on an elongated peduncle, the branches 6in. long, often glabrous. Summer. *fr.* purple, ovoid or oblong, baccate, 3in. to 5in. long, edible. *l.* ensiform, thick, very rigid, 1½ft. to 3ft. long, 1in. to 2in. broad, scabrous, slightly concave above, pungent-tipped, the reddish-brown margins copiously filamentose, very squarrose. *h.* 8ft. to

FIG. 241. YUCCA FILAMENTOSA FLACCIDA.

10ft.; or plant stemless. Colorado, 1873. Hardy or half-hardy. (I. H. n. s. 115.)

Y. b. australis (Southern). A synonym of *Y. filifera.*

Yucca—*continued.*

Y. b. circinata (curled-threaded). *l.* 2ft. to 2½ft. long, five to six lines broad, copiously circinate-thready.

FIG. 242. YUCCA FILAMENTOSA ORCHIOIDES.

Y. b. fragilifolia (fragile-leaved). *l.* weaker than in the type, the outer ones recurved, 1½ft. long, six to seven lines broad, the margins having a few threads above only. Trunk short and slender.

Yucca—*continued.*

Y. b. scabrifolia (scabrous-leaved). *l.* rather fragile, the outer ones recurved, 1½ft. to 2ft. long, four to five lines broad, of a pleasing green, paler in the middle, and channelled above, rounded at back, the margins arcuate-filamentose.

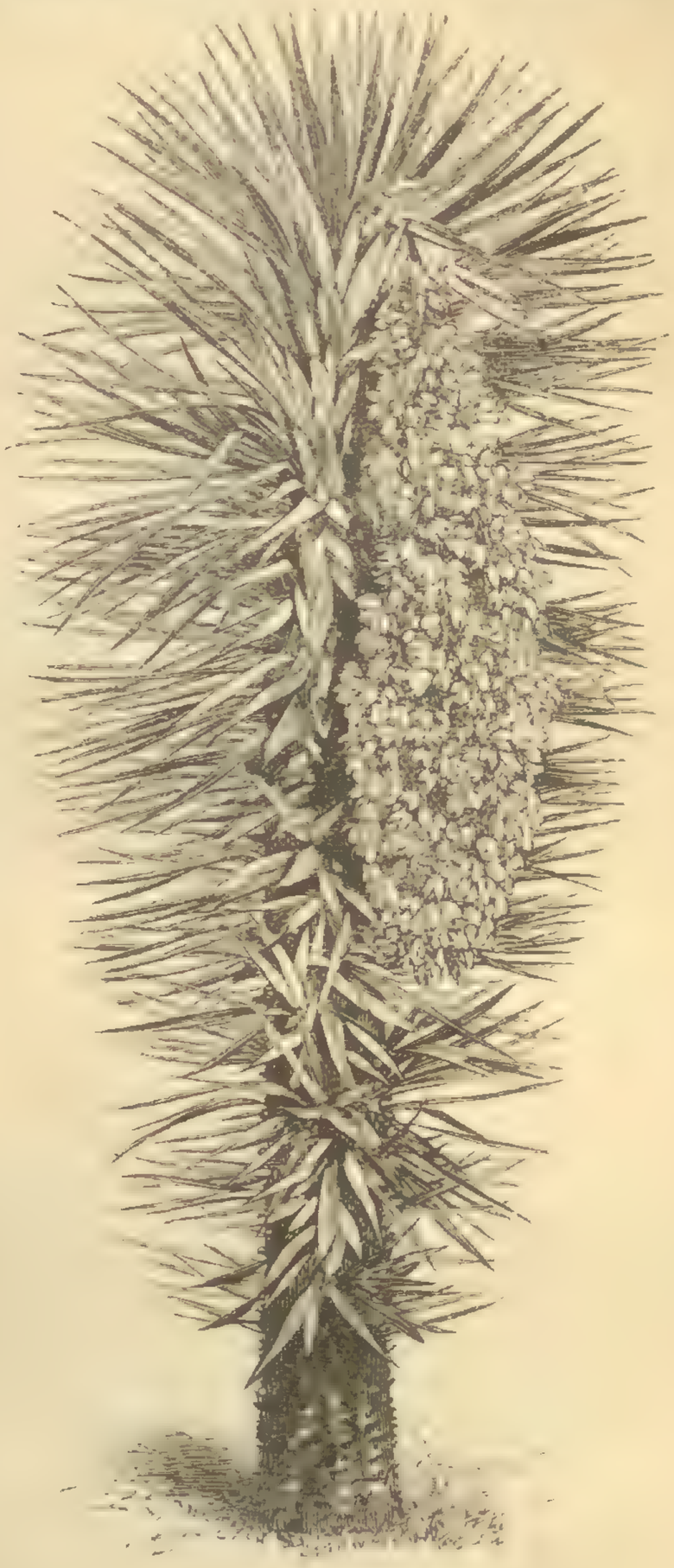


FIG. 243. YUCCA FILIFERA.

Y. Boerhaavii (Boerhaav's). *l.* about 200, linear, straight, the lower ones only recurved, 2ft. or more long, ½in. to ¾in. broad,

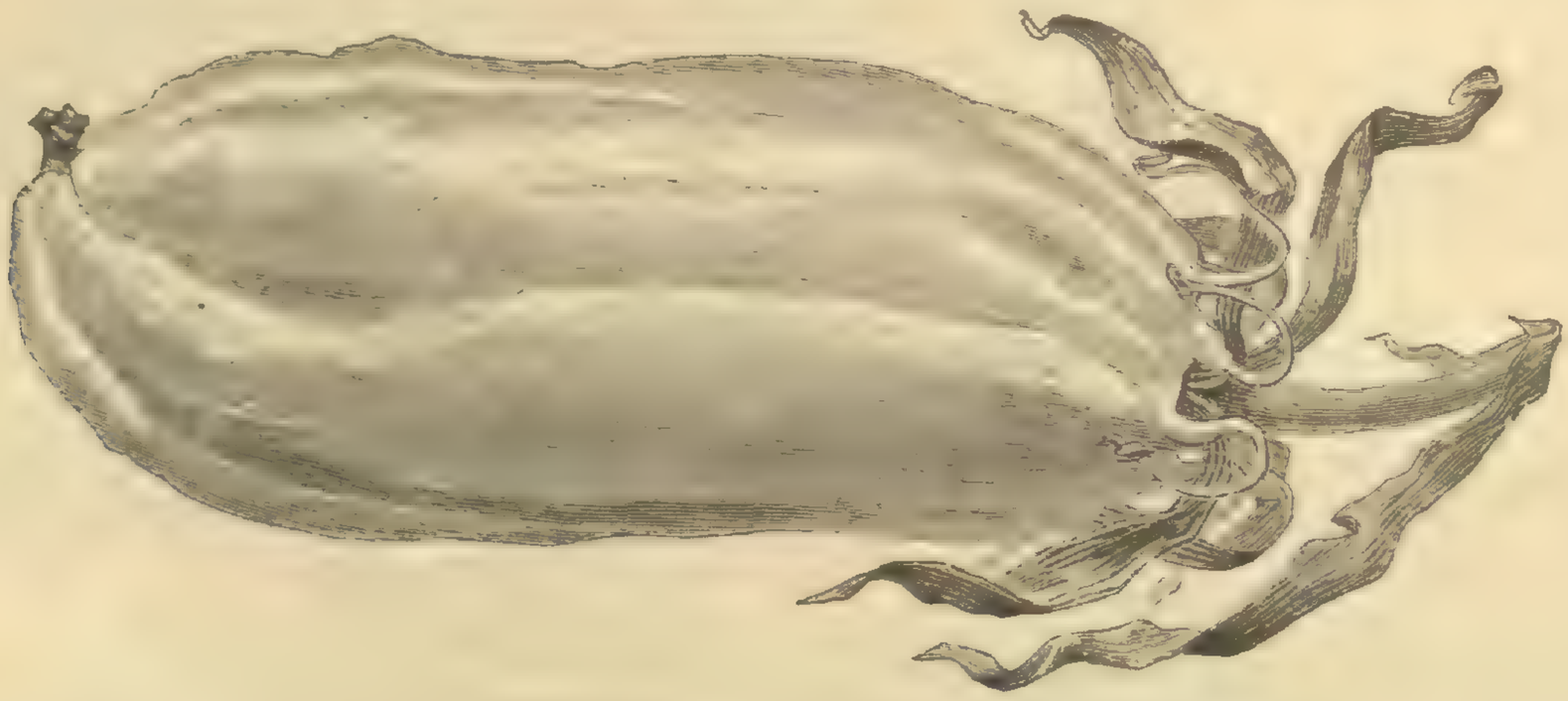


FIG. 244. FRUIT OF YUCCA FILIFERA.

Y. b. periculosa (dangerous). *l.* straight, 2½ft. to 3ft. long, eight to nine lines broad, channelled from base to apex, copiously filamentose in the upper half.

acuminate, much dilated at base, green (young ones slightly glaucescent), scarcely pungent at apex, the margins entire, narrowly bordered with red-brown or paler. Mexico (?), 1870. Greenhouse.

Yucca—*continued.*

Y. canaliculata (channelled). A form of *Y. Treculeana.*

Y. circinata (curled-threaded). A form of *Y. baccata.*

Y. concava (concave), of Haworth. A form of *Y. filamentosa.*

Y. concava (concave), of gardens. A synonym of *Y. Treculeana.*

Y. conspicua (conspicuous). A form of *Y. aloifolia.*

Y. constricta (constricted). *fl.*, perianth white, 2in. long, the segments oblong, acute; pedicels four to six lines long; panicle deltoid, 3ft. to 4ft. long, the branches ascending, 6in. to 9in. long, ten to fifteen-flowered; peduncle elongated. Summer. *l.* 100 to 200, dense, rigid, linear, 1½ft. to 2ft. long, six to eight lines broad, slightly narrowed at base, channelled above, pungent-tipped, the narrow, red-brown margins very filamentose. Stem simple, 3ft. to 5ft. high. Utah to North Mexico, 1862. Half-hardy. SYNS. *Y. albo-spica* (F. d. S. ser. ii., vii., p. 110), *Y. angustifolia*, of Carrière (R. H. ix. 1860, f. 3).

Y. contorta (twisted). A name applied in gardens to both *Y. rupicola* and *Y. Treculeana.*

Y. cornuta (horned). A garden synonym of *Y. Treculeana.*

Y. crenulata (crenulate). A form of *Y. aloifolia.*

Yucca—*continued.*

½in. long; bracts large, scarious; panicle rhomboid, the branches flexuous, ascending, 6in. long; peduncle elongated; inflorescence 4ft. to 8ft. long. June. *l.* thirty to fifty, in a dense rosette, ensiform, 1½ft. to 2ft. long, 1½in. to 2in. broad, rather firm, Reed-like, slightly glaucescent, the whitish margins clothed with thread-like filaments. North America, 1675. Plant stemless or nearly so. See Fig. 240. (B. M. 900; Ref. B. 324; R. H. 1860, p. 214.)

Y. f. antwerpensis (Antwerp). *fl.*, panicle 1ft. to 1½ft. long, the branches four to six, shortly pubescent; inflorescence 2ft. to 3ft. long. *l.* fifteen to twenty, erecto-patent, 1ft. to 1½ft. long, 1in. broad, the marginal threads few and very slender. 1875. (B. M. 6316, under name of *Y. orchioides major.*)

Y. f. aureo-variegata (golden-variegated). *l.* marked with bright yellow, longitudinal bands. 1884. Greenhouse.

Y. f. concava (concave). *l.* 1½ft. long, 3in. to 4in. broad, erect-incurved, concave on the face. 1810.

Y. f. flaccida (flaccid).* *fl.*, perianth segments broad; panicle branches pubescent. *l.* slenderer and weaker than in the type, much recurved, the marginal fibres stronger. 1816. See Fig. 241. SYN. *Y. flaccida* (B. R. 1895; Ref. B. 323; R. H. 1859, p. 556).

FIG. 245. FLOWER OF YUCCA FLEXILIS (natural size).

Y. Desmetiana (De Smet's). *l.* 100 to 200, rather loosely disposed, linear, nearly 1ft. long, ½in. to ¾in. broad, all recurved, the young ones purple, glaucous, the old ones green, not pungent at apex, with narrow, pale, serrulated margins, dilated at base. Mexico, 1868. Greenhouse.

Y. Draconis (dragon's). A form of *Y. aloifolia.*

Y. Ellacombei (Ellacombe's). A form of *Y. gloriosa.*

Y. ensifolia (sword-leaved). A form of *Y. flexilis.*

Y. exigua (dwarf). *fl.*, perianth white, tinged with green outside, the segments oblong, acute, 1½in. long; bracts large, lanceolate; pedicels very short; panicle loose, 3ft. long, the branches pubescent, ascending, 6in. long; peduncle elongated, furnished with much-reduced, lanceolate leaves. Summer. *l.* thirty to forty, ensiform, 1½ft. long, 1in. to 1½in. broad, similar to those of *Y. gloriosa*, the margins brown, entire. Western North America, 1873. Plant stemless. (Ref. B. 314.)

Y. falcata (sickle-leaved). A form of *Y. flexilis.*

Y. filamentosa (thready). Silk Grass. *fl.*, perianth white, tinged with green outside, 1½in. to 2in. long, the segments oblong or oblong-lanceolate, ½in. to ¾in. broad; pedicels drooping, ¼in. to

Y. f. glaucescens (glaucescent). *fl.*, perianth segments fifteen to sixteen lines long; panicle and rachis densely clothed with bluish-grey pubescence. *l.* more glaucous than in the type, 1in. broad, the marginal threads rarely slenderer. 1819. SYN. *Y. glaucescens* (S. B. F. G. 53).

Y. f. grandiflora (large-flowered). A synonym of *Y. f. maxima.*

Y. f. major (greater). A synonym of *Y. f. maxima.*

Y. f. maxima (largest). *fl.*, perianth 2½in. to 3in. long, the segments more acuminate than in the type. 1873. (Ref. B. 325.) This is also known as *Y. f. grandiflora* and *Y. f. major.* There is a white-variegated form.

Y. f. orchioides (Orchis-like).* *fl.*, perianth segments ovate, 1in. long; raceme simple, 9in. long; peduncle 1½ft. long. *l.* ten to twelve, 6in. to 9in. long, eight to ten lines broad, scarcely filamentose on the margins. 1861. See Fig. 242. SYN. *Y. orchioides* (R. H. 1861, p. 370).

Y. f. puberula (puberulous). *fl.*, perianth segments oblong-lanceolate, 1½in. to 1¾in. long; panicle branches pubescent. *l.* weaker and more recurved than in the type. SYN. *Y. puberula* (Ref. B. 322; S. B. F. G. 251).

Yucca—*continued.*

Y. filifera (thread-bearing). *fl.*, inflorescence 6ft. to 8ft. long, on a short peduncle, the branches sometimes 2ft. long. *fr.* fleshy, indistinctly ribbed, pendulous in a young state, erect afterwards. *l.* 1½ft. long, obscure green, lightly channelled, 1in. to 1¼in. broad. Trunk sometimes 50ft. high, 2ft. to 3ft. in diameter. Mexico, 1826. Greenhouse. See Figs. 243 and 244 (R. H. 1876, p. 433.) SYN. *Y. baccata australis* (of Baker).

Y. flaccida (flaccid). A form of *Y. filamentosa.*

Y. flexilis (flexible). *fl.*, perianth white, 3in. long, the segments oblong, acute; pedicels ½in. to ¾in. long, the bracts small; inflorescence 4ft. long, the central branches 6in. long, six to nine-flowered. Summer. *l.* dense, linear, 2ft. to 2½ft. long, 1in. to 1½in. broad, obscurely plicate, moderately firm, pungent-pointed, the margins horny, red-brown, entire or sometimes obscurely serrulated. Caudex simple, short. Mexico, 1859. Greenhouse. See Fig. 245. (R. H. 1859, p. 400.) SYNS. *Y. acuminata, Y. angustifolia, Y. longifolia, Y. mexicana, Y. stenophylla* (all of gardens).

FIG. 246. YUCCA FLEXILIS ENSIFOLIA.

Y. f. ensifolia (sword-leaved).* *fl.*, perianth slightly tinged with red outside, 2in. long; peduncle rather shorter than the leaves. *l.* forty to eighty, nearly erect, pale green (at first slightly glaucescent), 2ft. to 2½ft. long, 1¼in. to 1½in. broad. Stem slender, sometimes 4ft. to 5ft. high. 1870. See Fig. 246. SYN. *Y. ensifolia* (Ref. B. 318).

Y. f. falcata (sickle-shaped). *fl.*, perianth white, slightly tinged with green on the outside, 2in. to 2½in. long; panicle rhomboid, rather loose, 2ft. long; peduncle 1ft. long. *l.* 100 to 150, green, straight, 2ft. long, 1¼in. to 1½in. broad. Plant nearly stemless.

Y. f. nobilis (noble). *l.* sixty to eighty, nearly straight, 1ft. to 1½ft. long, 1¼in. to 1½in. broad, concave on the face, the margins horny, pale or red-brown; young ones very glaucescent.

Y. f. semi-cylindrica (half-cylindrical). *l.* forty to fifty, 1½ft. to 2ft. long, nine to ten lines broad, pale green (at first slightly glaucescent), the outer ones recurved, channelled above from base to apex, the margins red-brown. 1870.

Y. fragilifolia (fragile-leaved). A form of *Y. baccata.*

Y. funifera (cord-bearing). *l.* not numerous, ensiform, 6ft. to 7ft. long, thick, rigid, dingy-green, striolated, the margins furnished with robust, tenacious processes, often 10in. to 12in. long. Mexico, about 1866. Greenhouse. Perhaps a variety of *Y. Treculeana.*

Y. Ghiesbreghtii (Ghiesbreght's). A garden synonym of *Y. guatemalensis.*

Y. gigantea (gigantic). *fl.*, perianth white, 3in. to 3½in. long; panicle 2ft. to 2½ft. long, with twelve to fifteen branches, the central ones nearly 1ft. long, eight to ten-flowered. Summer. *l.* ensiform, straight, spreading, shining-green, 4ft. to 5ft. long, 3in. to 3½in. broad, acuminate, pungent-pointed, the margins whitish; lower ones scarcely recurved. Stem (in gardens) simple, slender, 3ft. to 4ft. high. Mexico (?), 1859. Greenhouse.

Y. glauca (glaucous).* *fl.*, perianth white, broadly campanulate, the segments oblong, 1½in. long; lower pedicels five to six lines long; bracts small, lanceolate; panicle rhomboid, 2ft. to 3ft. long, the branches ascending, glabrous; peduncle 3ft. long. Summer. *l.* twenty-five to thirty, dense, ensiform, 1½ft. long, 1¼in. to 1½in. broad, the young ones slightly glaucous, somewhat pungent at apex, with very narrow, red-brown, entire or slightly filamentose margins, the outer ones recurved. North America, 1814. Plant stemless, half-hardy. (B. M. 2662; Ref. B. 315.)

Y. glaucescens (glaucescent). A form of *Y. filamentosa.*

Y. gloriosa (glorious).* Mound Lily. *fl.*, perianth tinged with red outside, campanulate, 1½in. to 2½in. long, the segments oblong, acute; pedicels four to twelve lines long; bracts small, lanceo-

FIG. 247. YUCCA GLORIOSA.

Yucca—*continued.*

late; panicle rhomboid, rather dense, 4ft. to 6ft. long, with erecto-patent, glabrous or pubescent branches, the lower ones 1ft. to 1½ft. long; peduncle elongated, furnished with reduced leaves. July. *l.* 100 or more in a dense rosette, 1½ft. to 3ft. long, 2in. to 3in. broad, rigid, erect, obscure-green, slightly glaucescent, somewhat concave on the face and scabrous at back, pungent-pointed, the narrow, red-brown margins entire, or in young forms obscurely serrulated. Stem when old 4ft. to 6ft. high, simple or branched. United States, 1596. See Fig. 247. (B. M. 1260; Ref. B. 320.)

Y. g. acuminata (taper-pointed). *fl.* fewer; perianth 1½in. to 2in. long; panicle smaller. *l.* fifty to sixty, 6in. to 2ft. long, 1½in. to 1¾in. broad, green, straight, acuminate. 1800. Nearly stemless. SYN. *Y. acuminata* (Ref. B. 316; S. B. F. G. 195). *Y. patens* is a similar form, with more numerous, broader, and more glaucescent leaves.

FIG. 248. YUCCA GLORIOSA RECURVIFOLIA.

Y. g. Ellacombei (Ellacombe's). *fl.*, perianth segments acuminate, 2½in. to 3in. long; lower pedicels 1in. to 1½in. long. *l.* forty to fifty, nearly straight, 2ft. to 2½ft. long, 1½in. to 1¾in. broad, concave on the face, at length smooth. Nearly stemless. SYN. *Y. Ellacombei* (Ref. B. 317).

Y. g. medio-striata (middle-striped). *l.* having a broad, whitish-green band down the centre on each side. 1880. (F. d. S. 2393-4.)

Y. g. minor (lesser). *fl.*, perianth 1½in. long; pedicels short; inflorescence 3ft. to 4ft. long. *l.* straight, 1ft. to 1½ft. long, 1½in. to 1½in. broad. Dwarfer than the type. (Ref. B. 319.)

Y. g. obliqua (oblique). *l.* glaucous, 1½in. to 2in. broad, oblique, bending. 1808.

Yucca—*continued.*

Y. g. plicata (plaited). *fl.*, perianth 2in. long; panicle large. *l.* slenderer than in the type, but straight, much plaited, 1½ft. to 2¼ft. long, 2in. to 2½in. broad, slightly scabrous at back.

Y. g. pruinosa (pruinose). *l.* seventy to eighty, straight, nearly flat in the middle, 2ft. to 2½ft. long, fifteen to sixteen lines broad, glaucescent. Nearly stemless.

Y. g. recurvifolia (recurved-leaved).* *fl.*, perianth segments more narrowed at apex than in the type. *l.* 100 to 150, weaker than in the type, 2ft. to 3ft. long, the outer ones much recurved, less pungent at apex, flat and obscurely plicate in the middle above, concave only just above the base and below the apex; young ones glaucous. Stem short, often branched. 1794. See Figs. 248 and 249. SYNS. *Y. japonica* (of gardens), *Y. pendula* (R. H. 1859, p. 490), *Y. recurva*, *Y. recurvifolia* (Ref. B. 321). The garden form *foliis-variegatis* has a pale greenish-red stripe down the centre. 1883. (I. H. 1883, 475.)

Y. g. rufocincta (reddish-girdled). *l.* slightly recurved, sub-glaucescent, 2in. broad, smooth on both sides, with clearly-defined, reddish-brown margins. 1816. Nearly stemless.

FIG. 249. YOUNG PLANT DEVELOPED FROM ROOT CUTTING OF YUCCA GLORIOSA RECURVIFOLIA.

Y. g. superba (superb). *fl.* larger than in the type; panicle branches much spreading. *l.* broad and straight. Trunk at length 10ft. high. (A. B. R. 473, under name of *Y. gloriosa*.)

Y. g. tortulata (slightly-twisted). *l.* about forty, straight, glaucescent, 1½in. to 1¾in. long, fourteen to fifteen lines broad, often oblique, flexuous. 1873. Stemless.

Y. guatemalensis (Guatemala). *fl.*, perianth white, 2½in. to 3in. long, the segments oblong-lanceolate, acute, ¾in. to 1in. broad, the outer ones broader; pedicels ¾in. to 1½in. long; bracts white, scarious; panicle dense, rhomboid, 2ft. to 3ft. long, the central branches 6in. long; peduncle very short. Summer. *l.* fifty or more, loosely disposed, ensiform, 2ft. to 3ft. long, 2in. to 3in. broad, shining-green, scarcely pungent at apex, the whitish margins obscurely serrulated; upper ones ascending, much

Yucca—*continued.*

recurved. Stems sometimes 15ft. to 20ft. high, usually simple and tuberous at base. Mexico and Guatemala, 1873. Habit of *Y. aloifolia*. (Ref. B. 313.) SYNS. *Y. Ghiesbreghtii* and *Y. Roezlii* (of gardens).

Y. japonica (Japanese). A garden synonym of *Y. gloriosa recurvifolia*.

Y. lævigata (smooth). A garden synonym of *Y. Peacockii*

Y. lineata-lutea (yellow-lined). A form of *Y. aloifolia*.

Y. longifolia (long-leaved). A synonym of *Y. flexilis*.

Y. lutescens (yellowish). A synonym of *Y. rupicola*.

Y. macrocarpa (large-fruited). *fl.*, panicle sub-sessile, with lanceolate, white, fleshy bracts. *fr.* pale yellowish, cylindrical, obtuse, not marked by any ridges, pulpy, 4in. to 6in. long, 6in. to 7in. in circumference, of a pleasant, sweetish, acidulous taste. *l.* spreading, sharp-pointed, concave, with entire margins. Trunk 1ft. to 4ft. high. Santa Rita Mountains, Arizona. This species is closely allied to *Y. baccata*.

FIG. 250. YUCCA TRECULEANA.

Y. mexicana (Mexican). A synonym of *Y. flexilis*.

Y. nobilis (noble). A form of *Y. flexilis*.

Y. obliqua (oblique). A form of *Y. gloriosa*.

Y. orchioides (Orchis-like). A form of *Y. filamentosa*.

Y. o. major (greater). A synonym of *Y. filamentosa antwerpensis*.

Y. Parmentieri (Parmentier's). A synonym of *Furcræa Bedinghausii*.

Y. patens (spreading). A form of *Y. gloriosa*.

Y. Peacockii (Peacock's). *l.* about 100 (forming a dense rosette 3ft. in diameter), straight, linear, 1¼in. to 1½in. long, 1in. broad, obscure-green, smooth and channelled on the face, rounded and slightly scabrous at back, pungent-pointed, the margins entire, reddish-brown. Mexico (?), 1879. Greenhouse. SYN. *Y. lævigata* (of gardens).

Y. pendula (pendulous). A synonym of *Y. gloriosa recurvifolia*.

Y. periculosa (dangerous). A form of *Y. baccata*.

Y. polyphylla (many-leaved). A synonym of *Y. constricta*.

Y. pruinosa (pruinose). A form of *Y. gloriosa*.

Y. puberula (puberulous). A form of *Y. filamentosa*.

Y. purpurea (purple). A form of *Y. aloifolia*.

Y. quadricolor (four-coloured). A form of *Y. aloifolia*.

Y. recurva (recurved). A synonym of *Y. gloriosa recurvifolia*.

Y. recurvifolia (recurved-leaved). A form of *Y. gloriosa*.

Y. revoluta (revolute). A garden synonym of *Y. Treculeana*.

Y. Roëzlii (Roëzl's). A garden synonym of *Y. guatemalensis*.

Y. rufocincta (red-girdled). A form of *Y. gloriosa*.

Yucca—*continued.*

Y. rupicola (rock-loving). *fl.*, perianth white, slightly greenish externally, 2in. to 3in. long, the segments oblong, acute, nine to fourteen lines broad; pedicels ½in. to ¾in. long; bracts small, lanceolate; panicle loose, with ascending branches, the lower ones 6in. long; peduncle 3ft. long, furnished with reduced leaves. Summer. *l.* dense, ensiform, 1½ft. to 2ft. long, ¾in. to 1½in. broad, often twisted, pungent-pointed, smooth above, slightly scabrous at back, with pale, serrulated margins. Texas. Plant stemless. SYNS. *Y. contorta* and *Y. tortilis* (of gardens), *Y. lutescens*.

Y. scabrifolia (scabrid-leaved). A form of *Y. baccata*.

Y. semi-cylindrica (half-cylindrical). A form of *Y. flexilis*.

Y. stenophylla (narrow-leaved). A synonym of *Y. flexilis*.

Y. stricta (straight). A form of *Y. angustifolia*.

Y. superba (superb). A form of *Y. gloriosa*.

Y. tenuifolia (slender-leaved). A form of *Y. aloifolia*.

Y. Toneliana (Tonel's). A synonym of *Furcræa Bedinghausii*.

Y. tortilis (twisted). A garden synonym of *Y. rupicola*.

Y. tortulata (slightly-twisted). A form of *Y. gloriosa*.

Y. Treculeana (Trécul's).* *fl.*, perianth white, campanulate, 1½in. to 2½in. long, the segments oblong, acute, five to six lines broad; lower pedicels 1¼in. to 1½in. long; bracts white, as long as the pedicels; panicle dense, 2ft. to 4ft. long, the glabrous branches often 1ft. long; peduncle short. Summer. *l.* dense, ensiform, 2ft. to 4½ft. long, 2in. to 3½in. broad, coriaceous, dull green, scabrous, deeply concave on the face, rounded at back, pungent-pointed, the red-brown margins paler outside, at first obscurely serrulated; adults sometimes slightly filamentose. Stem 20ft. to 25ft. high, 1ft. to 2ft. in diameter, copiously branched. Texas and North Mexico, 1858. Greenhouse. See Fig. 250. (R. H. 1869, p. 406). SYNS. *Y. agavoides*, *Y. concava*, *Y. contorta*, *Y. cornuta*, *Y. revoluta*, *Y. undulata* (all of gardens). *Y. canaliculata* (B. M. 5201) is a form having small flowers, and deeply-channelled leaves about 2ft. long. 1858.

Y. tricolor (three-coloured). A form of *Y. aloifolia*.

Y. undulata (wavy). A garden synonym of *Y. Treculeana*.

Y. variegata (variegated). A form of *Y. aloifolia*.

Y. Whipplei (Whipple's). *fl.*, perianth white, tinged with green externally, the segments lanceolate, three to six lines broad; pedicels ascending, 1in. to 1½in. long; bracts white, minute; panicle dense, oblong-lanceolate, the slender branches 6in. long; peduncle elongated, with many reduced leaves; inflorescence 4ft. to 12ft. long. Summer. *l.* 150 to 200, dense, rigid, straight, linear, 1ft. to 1½ft. long, four to six lines broad, green, glaucous-tinged, dilated at base, flat above, channelled at back, sub-triquetrous, pungent-pointed, the pale margins minutely serrulated. California and Arizona, 1876. Plant stemless or nearly so, stoloniferous, half-hardy. (G. C. n. s., vi., p. 197.)

Y. W. violacea (violet).* A striking variety, with violet-tinted flowers. 1884. (R. H. 1884, p. 324.)

YULAN. *See* **Magnolia conspicua.**

ZACINTHA (so called from having been first discovered in the island of Zante, the ancient Zacinthus). ORD. *Compositæ*. A monotypic genus. The species is a glabrous, divaricately-branched, hardy, annual herb, of simple culture.

Z. verrucosa (warted). *fl.-heads* yellow, rather small; involucre narrow, the inner bracts folded, the outer ones spreading; receptacle flat, naked; florets all ligulate, truncately five-toothed at apex; achenes glabrous. Summer. *l.*, radical ones lyrate; cauline ones few, alternate, amplexicaul, more entire. *h.* 6in. to 12in. Mediterranean region. (S. F. G. 820.)

ZACINTHA (of Vellozo). A synonym of **Clavija** (which *see*).

ZALACCA (said to be the name of this genus in the Moluccas). Sometimes spelt *Salacca*. ORD. *Palmæ*. A genus comprising about eight species of stemless, stove Palms, with soboliferous roots; one is a native of Assam, and the rest inhabit the Malayan Archipelago. Flowers often pink, polygamo-monœcious or dicecious; spathes persistent, the lower ones sheathing the peduncle and branches, incomplete, the partial ones subtending the floriferous branchlets; spadices simple or fastigiately branched, pendulous, the floriferous branchlets catkin-like, rather short, remote or clustered, sessile or pedunculate; bracteoles connate in a two-celled cup. Fruit globose, turbinate, or ovoid, one to three-seeded, usually beaked. Leaves elongated, equally pinnatisect; segments alternate, fastigiate or equidistant, lanceolate or oblanceolate, straight or falcate, acuminate; rachis obtusely triangular, not produced into a spine; petioles slightly terete, armed with often spirally-disposed prickles. The best-known species are here described. The plants grown in some nurseries under the names of *Z. nitida* and *Z. Wagneri* perhaps represent distinct species, but so little is known about them that they cannot be described. The cultural directions given under **Cycas** are applicable to this genus.

Z. Blumeana (Blume's). A synonym of *Z. edulis*.

Z. edulis (edible). *fl.*, spadices drooping, long-branched, the males axillary, longer and more branched than the females; female catkins 2in. to 3in. long, thicker than the males. *fr.* fulvous-fuscescent, pyriform, 2½in. long. *l.* copious, clustered, erect, clothed with long, often serrate prickles; pinnæ linear-lanceolate, very long-acuminate, 1½ft. to 2½ft. long, 1½in. to 2in. broad, whitish beneath; petiole rather shorter than the rachis, and armed with robust prickles. Malay Archipelago, 1847. SYN. *Z. Blumeana*.

Z. Wallichiana (Wallich's). *fl.*, spadix axillary, many feet long, drooping or pendulous, long-branched; male catkins 1in. to 2in. long, the female ones cylindrical, 2in. long. *fr.* ovate-pyriform, 1½in. long, slightly acute. *l.* 18ft. to 20ft. long, clustered, nearly erect; pinnæ fascicled in twos, threes, or fours, narrow-lanceolate, with a long and slender, cuspidate point, attenuated and reduplicate at base, flat, the older ones 1½ft. long, 3in. to 4in. broad; petiole 4ft. to 6ft. long, armed with robust, fuscous prickles. India, &c., 1847. (G. C. 1873, p. 1803.)

ZALUZANIA (named after Adam Zaluziansky à Zaluzian, a physician of Prague, who published "Methodus Herbariæ" in 1602). Including *Chiliophyllum* and *Ferdinanda* (in part). ORD. *Compositæ*. A genus embracing seven species of stove, greenhouse or half-hardy, Mexican shrubs or under-shrubs. Flower-heads yellow (or white), heterogamous, radiate, sometimes rather small, in leafy, corymbose panicles. *Ferdinanda eminens* is a tall, stove shrub. Flower-heads white, small, disposed in an ample panicle; involucre short, the narrow bracts in two or three series. Leaves opposite, petiolate, large, angular-lobed. *Podachænium paniculatum* is now the correct name of this plant. It thrives in a compost of loam and peat, and may be increased by cuttings, inserted in sand, under a glass, in heat.

ZALUZIANSKIA (named in honour of the same person as the preceding genus). SYN. *Nycterinia*. ORD. *Scrophularineæ*. A genus comprising about sixteen species of more or less viscous, greenhouse or half-hardy. South African, annual or perennial herbs or sub-shrubs. Flowers sessile, spicate; calyx shortly five-toothed, bilabiate or two-parted; corolla persistent, at length cleft to the base, the limb of five spreading, entire or bifid lobes; stamens often four. Lower leaves alternate; upper ones opposite, few-toothed; floral ones bract-like, entire Three species have been introduced. All thrive in a mixture of sandy loam and peat. Seeds of *S. capensis* and *S. selaginoides* may be sown, in summer, in the open border. *S. lychnidea* may be increased by cuttings, or by divisions.

Z. capensis (Cape).* *fl.* whitish; corolla slender, nearly 1½in. long, spikes usually short and few-flowered, the central one usually acquiring a considerable length. Spring. *l.*, upper ones

Zaluzianskia—*continued*.

or all linear, few-toothed or quite entire, one-nerved, the margins and nerve usually ciliated. Stem erect, adpressedly villous. *h.* 6in. to 12in. Half-hardy annual. See Figs. 251 and 252.

FIG. 251. ZALUZIANSKIA CAPENSIS.

Z. lychnidea (Lychnis-like). *fl.* yellowish-white; corolla tube 1½in. or rather more in length; spikes elongated. May to July. *l.* oblong-linear, few-toothed or entire, one-nerved, nearly glabrous; floral ones amplexicaul, broadly lanceolate or oblong, obtuse, few-toothed or entire, the margins and nerve ciliated. Branches adpressedly villous. *h.* 6in. to 12in. 1776. Greenhouse sub-shrub. SYNS. *Erinus lychnidea* (B. M. 2504; B. R. 748), *Nycterinia lychnidea* (S. B. F. G. ser. ii. 239).

FIG. 252. ZALUZIANSKIA CAPENSIS, showing detached Flower, Leaf, and Corolla laid open to exhibit insertion of Stamens.

Z. selaginoides (Selago-like). *fl.* white, with an orange centre, fragrant at night; corolla nine to eleven lines long, the throat crowned with rigid pili; spikes interrupted at base. May. *l.* spathulate; lower ones obovate, on rather long petioles; upper ones oblong- or linear-spathulate; floral ones adnate to the calyx, dilated at base. *h.* 3in. to 5in. 1804. Half-hardy annual.

ZAMIA (from *zomia*, loss: a name given by Pliny to barren Pine cones, and hence applied by Linnæus to this genus, in allusion to the sterile appearance of the male fructification). ORD. *Cycadeæ*. A genus comprising about thirty species of handsome, stove or greenhouse, perennial plants, resembling Palms and in some particulars, Ferns; they are all natives of tropical America and the West Indies, one only extending up to the Southern

Zamia—*continued.*

United States. Leaves few, appearing one after another, pinnate; pinnæ broad or narrow, entire or serrated; petioles smooth or spinulose. Cones glabrous or rarely furfuraceous, solitary or two or more together; males oblong-cylindrical, with many series of superposed, peltate scales, on thick footstalks; females similar, but larger and thicker. Caudex (sometimes a dwarf trunk) simple, lobed, or branched, smooth or scarred, naked, epigæous or nearly hypogæous. The species best known to cultivation are here described. They thrive in a mixture of equal parts of good loam and peat, with a little silver sand added, and prefer a position where they would be shaded from bright sunshine in summer, and a temperature not lower than 60deg. in winter. In summer, they should be freely watered, both at the root and overhead. When sick, it is a good plan to shake all the soil away from their roots, wash them carefully, cut away all decayed parts, and repot them in fresh soil. They should then be plunged in bottom heat, and watered carefully till new growth appears. Propagated by division in the cases where the stems are clustered; by seeds and offsets where division is not possible. Except *Z. integrifolia*, the North American species, all are stove plants.

Z. amplifolia (ample-leaved).* *l.* erect; leaflets two pairs, broadly ovate-lanceolate, acuminate, glabrous, yellowish-green, 11in. long, 3in. to 4in. broad, strongly ribbed on both sides; rachis angular; petioles 15in to 16in. long, purplish, terete, puberulous, with scattered, minute prickles. Caudex oblong, obtuse, glabrous. Columbia, 1879. A handsome plant, probably now lost to cultivation.

Z. angustifolia (narrow-leaved). *l.*, adults glabrous; leaflets four to twenty on both sides, mostly alternate, narrow-linear, rather obtuse, 6in. to 8in. long, scarcely narrowed at base; petioles terete beneath, unarmed. *cones* 2in. to 2½in. long; males reddish-tomentose, cylindrical; females thicker, obtusely cuspidate; peduncles erect, rufous-pubescent. Caudex ovoid-conical. West Indies.

Z. calocoma (beautiful-haired).* *l.* 3ft. long, very slenderly pubescent; leaflets eighty on each side, alternate and opposite, the larger ones 4in. long, long-linear, acuminate, slightly narrowed at base, parallel-nerved, the margins revolute; petioles 4in. long, terete beneath. Trunk dwarf. Antilles. *Microcycas calocoma* is now the correct name of this species.

Z. Chigua (Chigua). *l.* 4ft. long; leaflets alternate, very numerous, spreading, long-lanceolate, acuminate, obsoletely denticulate, glabrous, about sixteen-nerved; petioles thickly, and rachis sparsely, prickly. *cones*, males cylindrical, 5¼in. to 7½in. long, cuspidate; females much larger, cuspidate. Trunk cylindrical, 8in. high. Darien, 1847. SYNS. *Z. Lindleyi*, *Z. princeps*, *Aulacophyllum Ortgiesi*.

Z. Fischeri (Fischer's). *l.*, leaflets three to six on each side, 1½in. to 2½in. long, about ¼in. broad, the lower ones alternate, the upper ones opposite, lanceolate, acuminate, attenuated at base, slightly inequilateral, the upper margin argutely serrulated one-third to half its length; rachis 1½in. to 2¾in. long, glabrous or nearly so, produced above the leaflets in a mucro; petioles nearly terete, 2in. or more long. Central America, 1849. (G. C. n. s., xix., p. 213.)

Z. Fraseri (Fraser's). A garden synonym of *Macrozamia Fraseri*.

Z. furfuracea (scurfy).* Jamaica Sago-tree. *l.*, leaflets ten to thirteen on each side, opposite or alternate, obovate-oblong or obversely lanceolate, spinulose-serrulated from the middle to the apex, serrated and sometimes unequally repand-lobed at the extremity, acute or obtuse, below densely, above and on the rachis and petioles slightly, scurfy; rachis almost unarmed; petioles prickly. *cones*, females yellow-scurfy, 2in. to 4in. long, ovoid-elongated. Trunk cylindrical. Mexico, 1691. (B. M. 1969; R. G. 932.)

Z. Ghellinckii (Ghellinck's). A synonym of *Encephalartos Ghellinckii*.

Z. integrifolia (entire-leafleted). Jamaica Sago-tree. *l.* spreading, glabrous; leaflets seven to sixteen on each side, alternate, rarely opposite, the larger ones 4in. to 7in. long, oblong or obovate-oblong, entire or obtusely serrulated at apex; petioles unarmed. *cones* slightly rufous-tomentose; males 2½in. long; females 3½in. long. Trunk short, globular or oblong. Southern United States, &c., 1758. Greenhouse. (B. M. 1851.)

Z. Kickxii (Kickx's). *l.* glabrous; leaflets about twenty-four on each side, alternate or sub-opposite, nearly all spreading, the lower ones smaller, the middle ones 2in. long, ½in. broad, lanceolate-elliptic, the margins, especially the lower one, serrulated; rachis sub-terete; petioles slender, unarmed. *cones*, males cylindrical, elongated, acute, 2in. long. Cuba.

Zamia—*continued.*

Z. Leiboldii (Leibold's). *l.*, leaflets fourteen to twenty-two on each side, truncate or acute at apex, opposite or alternate, twenty to twenty-five nerved; petioles semi-terete. Trunk 8in. high. Mexico, 1843. (R. G. 929, under name of *Z. L. angustifolia*.)

Z. Lindeni (Linden's). *l.* lanceolate, 6ft. long, on elongated petioles; leaflets forty to forty-four on each side, sessile, glabrous, 8in. long, elongated-lanceolate, somewhat falcate, dentate-serrated in the upper half. Trunk cylindrical, 3ft. or more high. Ecuador, 1875. A stately plant. (I. H. 1875, 195.)

Z. Lindleyi (Lindley's). A synonym of *Z. Chigua*.

Z. Loddigesii (Loddiges'). *l.*, leaflets erecto-accumbent, long-lanceolate or linear-lanceolate, slightly narrowed at base, acuminate at apex, 7½in. long, slightly thickened on the margins, serrated from the middle (or nearly so) to the apex; rachis slightly spiny. Caraccas, 1844. (R. G. 926.)

Z. media (medium). A synonym of *Z. pumila*.

Z. Miquelii (Miquel's). A garden name for *Macrozamia Fraseri*.

Z. montana (mountain-loving). *l.* 4ft. to 5ft. long, forming a terminal tuft; leaflets eight to ten pairs, 1ft. or more long, 2in. to 4in. broad, oblanceolate to linear-oblanceolate, abruptly acuminate, with one prominent tooth and a few obscure ones; petioles dusky-tomentose at base, beset throughout with scattered prickles. Trunk 4ft. to 5ft. high, 9in. thick. Columbia, 1882.

Z. muricata (rough). *l.*, leaflets six to eleven pairs, alternate and sub-opposite, oblong or obversely oblong or oblong-lanceolate, acuminate, obscurely spiny-serrulated from the middle to the apex; petioles terete, prickly. *cones* 3½in. to 4in. long, cylindrical, sub-acute at apex; peduncles glabrous. Trunk glabrous. Central America, 1849.

Z. obliqua (oblique). *l.* unarmed, glabrous or covered with a close pubescence; leaflets seven to ten on both sides, ovate-lanceolate, obtusely acuminate at apex, attenuated at base, about 8in. long and nearly 3in. broad. Trunk slender, attaining a height of 6ft. to 7ft. Columbia, 1878. (G. C. n. s., xvii., p. 461; I. H. 1877, 289.)

Z. Ottonis (Otto's). *l.* glabrous, 1ft. to 2ft. long; leaflets nine to fourteen pairs, alternate and (the upper ones) opposite, oblong- or obovate-lanceolate, obtuse, the larger ones 1½in. to 2in. long, argutely serrulated towards the apex, especially on the lower margin; petioles unarmed. *cones* 1½in. long; males fuscous-pubescent, cylindrical; females thick, cuspidate; peduncles 1½in. long, clothed with fuscous and white pubescence. Caudex tuberous, fusiform, 2½in. long. Cuba.

Z. picta (painted).* *l.*, leaflets spotted with white; petioles thicker and more pubescent than in *Z. muricata*, of which *Z. picta* was long considered a variety; it is, however, a much handsomer plant, very distinct from that species. Mexico.

Z. prasina (grass-green). *l.*, leaflets sixteen or seventeen pairs, oblanceolate-cuneate, denticulated towards the apex, bright grass-green above; petioles terete, slightly furrowed in front, and beset with a few white prickles. Honduras, 1881.

Z. princeps (princely). A synonym of *Z. Chigua*.

Z. pumila (dwarf). *l.*, leaflets eighteen to twenty on both sides, obovate-oblong, obtuse, entire or obsoletely serrulated, 2in. to 2¾in. long; petioles unarmed, scurfy-pubescent. *cones* 1½in. to 3½in. long, ellipsoid, obtuse. Florida and West Indies, 1812. Stove or greenhouse. (B. M. 2006.) SYN. *Z. media* (B. M. 1838).

Z. pygmæa (pigmy). *l.* 5in. to 8½in. long; leaflets three to ten pairs, opposite and alternate, obliquely sub cuneate at base, oval-oblong or oval, the larger ones 1¼in. long, serrated to the middle; petioles terete, unarmed, 2¾in. long. *cones*, males 1in. long, somewhat ovoid-globose, on long peduncles. Caudex growing underground. West Indies. Plant dwarf, highly glabrous. (B. M. 1741.)

Z. Roëzlii (Roëzl's). *l.* 6½ft. long, forming an elegant crown; leaflets 12in. to 16in. long, linear, acute, falcate, glabrous, shining, longitudinally furrowed. *cones*, females large, cylindrical, obtuse. Trunk thick. New Grenada, 1873. (I. H. 1873, 133-4.)

Z. Skinneri (Skinner's). *l.*, leaflets usually four pairs, opposite or alternate, oblong, acute at both ends, coriaceous, shining, spiny-serrulated from the middle to the apex, the larger ones 1ft. long, 3½in. broad; rachis and petioles prickly. *cones*, males three or four, aggregated, elongated-cylindrical, shortly pedunculate, 6in. long, ferruginous-pubescent. Central America, 1851. (B. M. 5242; F. d. S. 2212.) SYN. *Aulacophyllum Skinneri*.

Z. tonkinensis (Tonkin). *l.* pinnatifid, slightly recurved, glabrous, of a beautiful green; leaflets sessile, lanceolate, acuminate at apex, the margins undulated; petioles cylindrical, woolly, furnished with very robust spines. Trunk slender, cylindrical, erect, wholly clothed with large, round, fuscous scales. Tonkin. (I. H. 1885, 547.)

Z. villosus (villous). A synonym of *Encephalartos villosus*.

Z. Wallisii (Wallis').* *l.* solitary, pinnate; leaflets few, lanceolate, plaited, 1ft. long; petioles reddish, prickly. Trunk short and fleshy. New Grenada, 1875. This plant is allied to *Z. Skinneri*.

ZAMIOCULCAS (from *Zamia*, a cycadaceous genus, and *Culcasia*, belonging to the Aroids; both of which the present plants are supposed to resemble). Including *Gonatopus*. ORD. *Aroideæ* (*Araceæ*). A small genus (two species) of stove, herbaceous perennials, natives of Eastern tropical Africa. Flowers dense; spathe tube convolute, sub-globose, the lamina lanceolate or boat-shaped, horned at apex; spadix sessile, cylindrical, shorter than the spathe, inappendiculate. Leaves many, on thick petioles, imparipinnate with six to eight pairs of alternate pinnæ, or bipinnate with opposite pinnæ and pinnules; petioles very shortly sheathing at base. These plants thrive in a compost of sandy loam, leaf mould, and small pieces of charcoal, and require a moist atmosphere. Propagation may be effected by division of the root. "Young plants may also be obtained from the leaflets after they have disarticulated from the rachis, as follows: Place some leaflets upon some soil, which must be kept damp; in a few days, the basal ends of the leaflets commence to swell, and each forms, after a short time, a small tuber. The tuber, with the leaf attached, may then be planted in a small pot, but should only be just covered with earth; roots and leaf-buds quickly form, and soon a young plant is established" (N. E. Brown).

Z. Boivini (Boivin's). *fl.*, spathe 6in. long, the lamina dirty yellowish-green inside, lurid yellowish-green externally, darkly nerved and striated; spadix equalling the spathe, the female portion 1in. long, the male 4in. long, yellow, terete. *l.* solitary, radical, erect, 2ft. to 3ft. long, triangular-ovate, triternately pinnate; pinnæ opposite, ovate-lanceolate, acuminate, sessile or shortly petiolulate; petioles as thick as the little finger. Rhizome short, dilated. 1873. (B. M. 6026.) SYN. *Gonatopus Boivini*.

Z. Loddigesii (Loddiges'). *fl.*, spathe green, thick, the lamina about 2in. long; spadix greenish-yellow, 1½in. to 2in. long, constricted in the middle; scape very short, stout. June. *l.*, pinnæ 3in. to 6in. long, alternate, deciduous, obovate or elliptic-lanceolate, shortly petiolulate or sub-sessile; petioles about 2ft. long, terete, clavate at base. Rhizome short, horizontal, giving off large, white, sessile tubers. 1828. (B. M. 5985.) SYN. *Caladium zamiæfolium* (L. B. C. 1408).

ZANNICHELLIA (named after John Jerome Zannichelli, 1662-1729, a Venetian botanist). Horned Pondweed. ORD. *Naiadaceæ*. A small genus (one or several species) of hardy, slender, aquatic, annual herbs, inhabiting temperate and tropical regions. Flowers minute, solitary or in pairs, axillary. Leaves usually opposite, linear, submerged. *Z. palustris* is a British plant; it has no horticultural value.

ZANONA PALM. A common name for **Socratea exorhiza** (which *see*).

ZANTEDESCHIA (of Koch). A synonym of **Schismatoglottis** (which *see*).

ZANTEDESCHIA (of Sprengel). Synonymous with **Homalonema** and **Richardia** (which *see*).

ZANTE WOOD. The wood of *Chloroxylon Swietenia* and *Rhus Cotinus*.

ZANTHORHIZA. A synonym of **Xanthorhiza** (which *see*).

ZANTHOXYLEÆ. A tribe of *Rutaceæ*.

ZANTHOXYLUM (from *xanthos*, yellow, and *xylon*, wood; alluding to the colour of the roots). Sometimes spelt *Xanthoxylon*. Prickly Ash; Toothache-tree. SYN. *Pterota*. Including *Blackburnia* and *Fagara*. ORD. *Rutaceæ*. A genus embracing about eighty species of stove, greenhouse, half-hardy, or hardy shrubs or trees, often armed with stout prickles, inhabiting tropical and sub-tropical regions. Flowers often white or greenish, small, in axillary or terminal, pedunculate, broad or narrow cymes; calyx three to five-cleft, rarely obsolete; petals three to five, rarely wanting; stamens three to five. Fruit of one to

Zanthoxylum—*continued.*

five fleshy carpels, often aromatic or strongly scented. Leaves alternate, trifoliolate or unequally pinnate; leaflets opposite or alternate, entire or crenate, often oblique, dotted. A selection of the introduced species is here given. For culture, *see* **Zizyphus.**

Z. alatum (winged). *fl.* apetalous; panicles loose, sparingly branched. Spring. *l.* 1½in. to 9in. long; leaflets two to six pairs, lanceolate, obtusely acuminate, glabrous beneath; petiole and rachis usually broadly winged. Prickles often vertically flattened on the trunk and branches. India. Half-hardy shrub or small tree.

Z. americanum (American). Common Toothache-tree. *fl.* apetalous, in axillary umbels. March and April. *l.*, leaflets nine or eleven, ovate, obscurely serrated, equal at base; petioles round, and devoid of prickles; stipules replaced by prickles. *h.* 12ft. to 15ft. North America, 1740. Hardy tree.

Z. aromaticum (aromatic). *fl.* greenish-white; panicles terminal and axillary, glabrous, verrucose, 3in. to 5in. in diameter. April. *l.*, leaflets six to twelve-jugal, elliptic or oblong, crenate, with the crenatures broadly truncate, petiolulate, glabrous, glandular beneath. Prickles short, subulate, or wanting. *h.* 20ft. Jamaica, 1824. Stove tree.

Z. Blackburnia (Blackburnia). *fl.* white; petals imbricated; panicles axillary or terminal, loose, shorter than the leaves. May. *l.* pinnate, with a compound petiole of 4in. to 8in.; leaflets three to nine, very obliquely ovate, shortly acuminate, usually 2in. to 3in. long, petiolulate. *h.* 6ft. Australia, 1829. Greenhouse shrub or small tree. SYN. *Blackburnia pinnata*.

Z. clava-Herculis (Hercules' Club). Southern Prickly Ash. *fl.* greenish; panicles terminal and axillary, pubescent, 2in. to 4in. in diameter. April. *l.*, leaflets five to ten-jugal, lanceolate-oblong, pointed, quite entire or minutely serrated, sub-sessile, glabrous above, puberulous along the nerves or glabrate beneath. *h.* 20ft. to 50ft. West Indies, 1824. Stove tree.

Z. nitidum (shining). *fl.* greenish-white; racemes axillary, fascicled. May. *l.* imparipinnate, two or three-jugal; leaflets oblong, shining, remotely glandular-crenate, elongated and emarginate at apex, the midrib (as well as the petioles and branches) prickly. *h.* 10ft. China, 1823. Greenhouse shrub. (B. M. 2558.)

Z. piperitum (Pepper-like). Chinese or Japanese Pepper. *fl.* white. September. *l.*, leaflets oblong, unequal at base, crenate; petioles subulate, jointed; prickles stipular. *h.* 10ft. Japan, 1773. Half-hardy shrub. The small, globose, rugose fruits of this species are called Japan Pepper. SYN. *Fagara piperita*.

Z. Pterota (Pterota). Bastard Ironwood. *fl.* greenish, in axillary clusters, single or by pairs; stamens four. August. *l.*, leaflets seven to nine, ½in. to ¾in. long, obovate, crenate above the middle, sessile; petioles winged, jointed. Branches zigzag, armed with short, curved prickles. *h.* 10ft. South Florida, &c., 1768. Half-hardy tree.

Z. spinifex (thorny). *fl.* white, in a short glomerule. July. *l.*, leaflets one to three-jugal, oval or spathulate, emarginate or blunt, quite entire, ¼in. to ½in. long, glabrous, leathery, bitubercled at the base beneath, devoid of pellucid dots; petioles unarmed. Stipular prickles straight. West Indies, 1825. A low, tortuous, leafy, stove shrub. SYN. *Fagara microphylla*.

ZAPANIA. Included under **Lippia** (which *see*).

ZARA. A synonym of **Pistia** (which *see*).

ZARABELLIA (of Necker). A synonym of **Berkheya** (which *see*).

ZAUSCHNERIA (named after H. Zauschner, a German botanist). ORD. *Onagrarieæ*. A monotypic genus. The species is a handsome, small, half-hardy shrub, thriving in any light, but not on heavy soil. It may be multiplied by cuttings, made from young side shoots, in September, inserted in pots of sandy soil, and placed in a frame. If wintered in a cool house or frame, the young plants may be transferred to the open ground in spring, where they will grow and flower profusely the summer and autumn following. Division of old plants in spring, and seeds, are also available methods of increase. The latter should be sown, about March, on a gentle hotbed. In sheltered places and warm situations, this desirable plant proves itself sufficiently hardy to live outside in winter; but it is safer to propagate a young stock annually than to trust too much to its hardiness.

Zauschneria—*continued.*

Z. californica (Californian).* Californian Fuchsia; Humming-bird's Trumpet. *fl.* bright red, in loose spikes terminating the branches, large, erect, spreading, and with small, leafy bracts; calyx coloured, much produced, funnel-shaped, globose-inflated at base, the segments spreading; petals four, obcordate, or rather deeply two-cleft, rather longer than the calyx lobes; stamens eight, slightly exserted. Summer and autumn. *l.* crowded, linear-lanceolate, narrow, entire or denticulate, sessile, canescently pubescent, the lower ones opposite, those of the branches alternate. *h.* 1ft. California and Mexico, 1847. (F. d. S. 404; P. M. B. xv. 195.)

Z. c. latifolia (broad-leaved). *fl.* rather smaller; calyx dull red. *l.* rather broader, and, as well as the branches, villous-canescent. (B. M. 4493.)

ZEA (*Zea* or *Zeia* was the old Greek name for Spelt, or some similar common Cereal, and is found as far back as Homer). SYN. *Mays*. ORD. *Gramineæ*. A monotypic genus. The species is a well-known, tall, half-hardy Grass. Maize, probably, ranks next to Rice in its importance as a food-plant; it is very largely cultivated throughout

FIG. 253. UPPER PORTION OF PLANT OF ZEA MAYS, showing axillary Female and terminal Male Inflorescences; also Longitudinal Section through Seed.

the warmer regions of the globe, and is imported into England in immense quantities. A fine flour, known as Corn Flour and Maizena, is prepared from the grain of *Z. Mays*, and is largely employed in the making of light puddings, custards, &c. Numerous varieties are grown in gardens, most of them sufficiently hardy to endure the open air. They thrive in any fairly good soil, and may be increased by seeds.

Z. Mays (Maize).* Guinea or Turkey Wheat; Indian Corn; Maize; Mealies. *fl.*, spikelets unisexual, monœcious, the males in a terminal panicle, two-flowered, the females in large, axillary spikes, longitudinally many-seriate, one-flowered. June. *fr.*, spikes (known as "cobs") long and thick, sheathed with imbricated pales. *l.* ample, entire, broad, flat. *h.* 3ft. Probably of American origin, 1562. See Fig. 253. (B. M. Pl. 296.) *gracillima* is a variety of very graceful habit.

Zea—*continued.*

FIG 254. ZEA MAYS VARIEGATA.

Z. M. variegata (variegated).* This differs from the type in its leaves being striped with white. It is an exceedingly ornamental plant. See Fig. 254.

ZEBRA PLANT. A common name for **Calathea zebrina** (which *see*).

ZEBRA WOOD. A common name for **Myrtus fragrans** and **Guettarda speciosa** (which *see*).

ZEBRINA (the leaves are striped in a zebra-like manner). ORD. *Commelinaceæ*. A small genus (two species) of stove or greenhouse, loosely decumbent, pendulous or climbing, branched herbs, natives of Mexico. Flowers rather small, shortly pedicellate; calyx trifid, or bifid with one lobe broader; corolla lobes spreading; stamens six; cymes sessile in a spathe, fascicle-like, few or many-flowered; spathes on terminal peduncles. Leaves ovate-lanceolate. *Z. pendula* forms a good basket plant, and is also useful for covering the earth in very large pots or tubs, or as an edging in suitable places. It thrives in a light, rich soil, and may be very quickly increased by cuttings.

Z. pendula (pendulous).* *fl.*, calyx tube whitish; corolla tube white, the segments rose-purple, ovate, obtuse; inflorescence glomerate. Summer. *l.* 1¼in. long, ¾in. to 1in. broad, sub-sessile, ovate-oblong, acute, scarcely acuminate, or somewhat obtuse, green, striped with white and sparsely pubescent above, purplish and densely pubescent beneath. Stems decumbent, branched, glabrous or pilose on one side. 1849. (R. H. 1855, p. 141.) SYNS. *Cyanotis vittata*, *Tradescantia tricolor*, *T. zebrina*. There is also a tricoloured variety, in which the whitish portion of the upper surface of the leaves is suffused with red.

ZEDOARY, ROUND. *See* **Curcuma Zedoaria.**

ZEHNERIA (named in memory of Joseph Zehner, a botanical artist of Vienna). SYN. *Pilogyne*. ORD. *Cucurbitaceæ*. A genus embracing about fifteen species of stove

Zehneria—*continued.*

or greenhouse, prostrate or climbing herbs, with perennial roots; one is found in Norfolk Island, another in Peru, and the rest inhabit tropical and South Africa and Asia. Flowers small, dicœcious, rarely monœcious; males fascicled, racemose, or corymbose, with three, rarely four or five, stamens; females solitary, fascicled, or corymbose, with three rudimentary stamens; calyx minutely five-toothed or five-lobed; corolla rotate, five-parted. Fruit small, baccate, shortly pedunculate. Leaves angularly toothed or lobed, often membranous. Tendrils simple. Only two species have been introduced. For culture, *see* **Gourds.**

Z. hastata (halbert-shaped). *l.* very ornamental, of a firm texture, lively green in colour, the veins being bordered with silvery-white, ovate, sub-orbicular, oblong, or narrow-lanceolate, glabrous or rarely slightly scabrous below, usually acute or acuminate at apex. Java, 1866. A handsome, tuberous-rooted climber. Its proper name is now *Melothria heterophylla.*

Z. suavis (soft). *l.* white-dotted and scabrous above, pilose, shortly hirsute, or scabrous beneath, cordate-ovate, angular or somewhat three to five-lobed, emarginate at base, the margins slightly and remotely denticulate. South Africa. Greenhouse. *Melothria punctata* is now the correct name of this plant.

ZENOBIA (so called after the famous Empress of Palmyra, who lived in the third century). ORD. *Ericaceæ.* A monotypic genus. The species is a hardy, highly glabrous, often glaucescent shrub, with terete branchlets. It thrives in a compost of sandy loam and peat. Propagation may be effected by seeds, or by layers.

Z. speciosa (showy).* *fl.* in umbel-like fascicles from axillary buds, mostly racemose on naked branches of the preceding year; calyx lobes short, triangular; corolla white, five-lobed; pedicels drooping. Summer. *l.* coriaceous, but deciduous, oval or oblong, 1in. to 2in. long, commonly crenulated or sparsely serrulated, reticulate-veined. *h.* 2ft. to 4ft. South United States, 1800. (S. B. F. G. ser. ii. 330.) SYNS. *Andromeda cassinæfolia* (B. M. 970), *A. speciosa* (L. B. C. 551).

Z. s. pulverulenta (powdery).* A white, glaucous form. (G. C. n. s., xx., p. 109; Gn. xxiv., p. 572). SYNS. *Andromeda dealbata* (B. R. 1010); *A. pulverulenta* (B. M. 667).

ZEPHYRANTHES (from *zephyros*, the west wind, and *anthe*, a flower; a fanciful name given by Herbert). Flower of the West Wind; Zephyr Flower. Including *Habranthus* (in part) and *Pyrolirion.* ORD. *Amaryllideæ.* A genus comprising nearly thirty species of pretty, stove, greenhouse, or hardy, bulbous plants, inhabiting the warmer parts of America; one species being found in Western tropical Africa. Flower always solitary in a spathaceous bract, which is entire or bifid at apex and tubular at base, pedicellate or rarely sessile, erect or slightly declinate; perianth pink, white, purplish, or yellowish, sometimes various-coloured in the same species, funnel-shaped, the tube very short or more or less elongated, enlarged above; lobes equal or slightly unequal, erecto-patent above; stamens affixed to the throat, equal, or three rather smaller; scape elongated, fistular. Leaves few, linear or loriform, appearing with or after the flowers. The species best known to gardeners are described below. The plants grow and flower in summer, and rest in winter. They should be grown in a sunny frame, or on a shelf in a greenhouse during warm weather. They must be protected from frost in winter; a dry shelf in a heated greenhouse or shed being the best position for them. Some of the kinds may be left outside if planted in a dry, sunny border. They require a compost of turfy loam, with a little rotten manure and sand; and should be repotted about every two years. Propagated by separating the offset bulbs; or by seeds, which are freely produced.

Z. Andersoni (Anderson's).* *fl.*, perianth golden or copper-coloured, fuscous-reddish at base, striated outside, 1⅝in. long; pedicel 1½in. or more long; spathe divided above; scape reddish, 3in. to 4in. long. May. *l.* narrow-linear, acute, green or slightly glaucous, 5in. to 6in. long. Monte Video, 1829. Greenhouse or half-hardy. SYN. *Habranthus Andersoni* (B. R. 1345; L. B. C. 1677; S. B. F. G. ser. ii. 70). *Z. A. aureus* and *Z. A. cupreus* have respectively golden and coppery flowers.

Zephyranthes—*continued.*

Z. A. texana (Texan). *fl.*, perianth yellow; segments round, obtuse. SYN. *Habranthus Andersoni texanus* (B. M. 3596).

Z. Atamasco.* Atamasco Lily. *fl.*, perianth white (when young, suffused with white, purple, or flesh-colour), the segments recurved, lanceolate, acute; scape terete, 6in. to 12in. long. May. *l.* linear, slightly succulent, channelled, glabrous, nearly 1ft. long. Virginia, &c., 1629. Hardy. (L. B. C. 1899.) SYN. *Amaryllis Atamasco* (B. M. 239).

Z. candida (white).* Peruvian Swamp Lily. *fl.* inodorous, erect, shortly pedicellate; perianth white, greenish at base, the segments sub-equal, ovate, obtuse, 1in. long; spathe purplish, much shorter than the pedicel; scape erect or declinate, longer or shorter than the leaves. September. *l.* fascicled, linear, flat, highly glabrous, fleshy, of a pleasing green, 2in. to 8in. long. Buenos Ayres, 1822. Greenhouse. (B. M. 2107; L. B. C. 1419.) SYN. *Amaryllis candida* (B. R. 724).

Z. carinata (keeled).* *fl.*, perianth tube green, ¾in. long, straight, the segments pink, 2in. long, obovate-oblong, acute, many-nerved; pedicel 1½in. long, shorter than the tubular, bifid spathe; scape 1ft. high, glabrous, reddish at base. May. *l.* ½in. broad, channelled, keeled, green, reddish at base. Mexico, 1824. Half-hardy. (B. M. 2594; S. B. F. G. ser. ii. 4.) *Z. grandiflora* is a form with pretty, blush flowers 3in. long. (B. R. 902 [the flower only; the leaves belong to another species].)

Z. citrina (citron-yellow).* *fl.*, perianth tube ⅓in. to ½in. long, the segments bright yellow, 1½in. long, oblong, sub-acute, connivent; pedicel less than 1in. long; spathe short, tubular; scape 4in. to 5in. long, tinged with red-brown below. August. *l.* three or four, narrow-linear, bright green, about 1ft. long, ⅛in. broad, deeply channelled above, rounded below, reddish-brown towards the base. Tropical America. (B. M. 6605.)

Z. concolor (one-coloured). *fl.*, perianth pale green or sulphur-coloured, nearly regular, erect, the segments oblong, acute; spathe tubular, coloured, shorter than the pedicel. April *l.* erect, glaucescent. *h.* 1ft. Mexico, 1844. Greenhouse. SYN. *Habranthus concolor* (B. R. 1845, 54).

Z. flava (yellow). *fl.* sessile; perianth of a beautiful pale golden-yellow, 3in. to 4in. long, the segments lanceolate, acute; spathe bifid, rather longer than the perianth tube; scape terete, in cultivation shorter than the leaves, longer and more robust in the wild state. May. *l.* one or two, linear, narrowed and recurved at apex, dark green, channelled. *h.* 1ft. Peru, 1833. Greenhouse. SYNS. *Pyrolirion aureum* (B. R. 1724), *P. flavum.*

Z. gracilifolia (slender-leaved). *fl.* pedicellate, erect, closing at night, inodorous; perianth rose-coloured, 1⅜in. long, the tube green; pedicel 2in. to 2½in. long; spathe tubular, cut at apex, 1¼in. long; scape 7in. to 8in. long, purplish at base. January. *l.* 1½ft. long, very slender, sub-cylindrical, shining green, deeply channelled above. South America, 1821. Hardy. SYN. *Habranthus gracilifolius* (B. M. 2464).

Z. g. Boothiana (Booth's). *fl.*, perianth pink, nodding; pedicel purplish; scape erect. *l.* glaucous-green, round and blunt at apex. Brazil, 1822. SYN. *Habranthus gracilifolius Boothianus* (B. R. 1967).

Z. grandiflora (large-flowered). A form of *Z. carinata.*

Z. macrosiphon (large-tubed). *fl.*, perianth bright rose-red, 2½in. to 2½in. long, the segments sub-erect, obovate, obtuse, about ⅓in. broad; pedicel about 1in. long; spathe two-valved, 1½in. long; scape terete, about as long as the leaves. *l.* three or four, linear, 1ft. long, ¼in. broad, bright green, rather fleshy, shallowly channelled. Mexico, 1881.

Z. mesochloa (half-green). *fl.*, perianth green below, white above, red externally, 1¾in. long, the tube very short, the outer segments ½in. broad, the inner ones narrower, all acute; pedicel about 1in. long; spathe fenestrate or divided at apex; scape 7in. long. June. *l.* eight or nine, green, channelled, acute. Buenos Ayres, 1825. Half-hardy. (B. R. 1361.)

Z. pumila (dwarf). *fl.*, perianth rose-coloured, drooping, the segments spreading; scape short. September. *l.* narrow. Chili, 1831. Greenhouse. SYN. *Habranthus pumilus* (L. B. C. 1771).

Z. robusta (stout). *fl.*, perianth purplish-rose, becoming white, 3½in. long, with scarcely any tube, the outer segments broader than the inner ones; spathe ¾in. long, undivided, the pedicel rather longer; scape robust. June. *l.* slightly glaucous, channelled. Bonaria, 1828. Greenhouse. SYN. *Habranthus robustus* (L. B. C. 1761; S. B. F. G. ser. ii. 14).

Z. rosea (rose-coloured).* *fl.* smaller than in *Z. carinata*; perianth rose-coloured, regular, erect, the segments rotate-spreading, oval, apiculate, green below the middle, nearly free to the base; pedicel 1½in. long; spathe reddish, bilobed; scape 6in. long, compressed. May. *l.* linear, flat, glabrous, striated, rounded at apex, 6in. or more long, recumbent. Cuba, 1828. Plant tufted, half-hardy. (B. M. 2537; B. R. 821.)

Z. sessilis (sessile). *fl.*, perianth tube more than ½in. long, the limb white, the outer segments more or less red; ovary sessile; style much deflexed. April. *l.* slender, semi-cylindric, green, 8in. to 9in. long. Mexico, 1870. Greenhouse. (Ref. B. 212.)

Z. s. striata (striated). *fl.*, perianth segments striated with red outside; style longer than the filaments. 1824 SYN. *Z. striata* (B. M. 2593.)

Zephyranthes—*continued.*

Z. s. verecunda (modest). *fl.*, perianth tube green, ⅝in. long, the limb white, 1⅛in. long, reddish outside; sepaline filaments shorter, petaline ones longer, than the style. 1824. SYN. *Z. verecunda* (B. M. 2583; Ref. B. 356).

Z. Spofforthiana (Spofforth). A synonym of *Z. tubispatha hybrida.*

Z. striata (striated). A variety of *Z. sessilis.*

Z. tubispatha (tubular-spathed). *fl.* fragrant, slightly nodding; perianth white, nearly 2in. long, with scarcely any tube; pedicel nearly 2in. long; spathe 1in. long, erect, cylindrical, bifid; scape 3in. to 4in. long, purplish at base. May. *l.* few, ligulate-linear, equalling the scape, two to three lines broad, slightly obtuse. Jamaica. Stove. SYN. *Amaryllis tubispatha* (B. M. 1586).

Z. t. hybrida (hybrid). *fl.*, perianth flesh-coloured. A hybrid between *Z. tubispatha* and *Z. carinata.* SYN. *Z. Spofforthiana* (B. R. 1745).

Z. verecunda (modest). A variety of *Z. sessilis.*

Z. versicolor (various-coloured). *fl.*, perianth at first rose-coloured, at length white, suffused with rose-colour, red at apex, red-striated below, the middle nerve green, 2in. long; pedicel 1½in. long, pale green; spathe and scape at first rose-coloured, becoming red, the former 1½in. long, the latter 5in. long. Winter. *l.* three or more, nearly 1ft. long, ¼in. broad, acute. South America, 1821. Hardy. SYN. *Habranthus versicolor* (B. M. 2485).

ZEPHYR FLOWER. *See* **Zephyranthes.**

ZERUMBET. Included under **Zingiber** (which *see*).

ZEUXINA (from *zeuxis*, a joining; so called from the coherence of the petals with the upper sepal). SYNS. *Adenostyles, Psychechilus, Tripleura.* Including *Haplochilus* and *Monochilus* (of Wallich). ORD. *Orchideæ.* A genus comprising about seventy-six species of slender or dwarf, stove, terrestrial Orchids, inhabiting the East Indies, the Malayan Archipelago, and tropical Africa. Flowers small, in sessile spikes; upper sepal erect, concave, the lateral ones spreading; petals narrow, often cohering with the upper sepal in a hood; lip adnate to the base of the very short column, erect, concave or slightly saccate at base, within naked, or with two calli, more or less contracted above the base. Leaves linear, ovate, or lanceolate, petiolate. Only one species calls for mention here. It requires similar treatment to that recommended for **Anœctochilus.**

Z. regia (royal). Striped King of the Woods. *fl.* white and green, in loose spikes; lip split into a pair of roundish, crenate lobes. *l.* ovate-lanceolate, 3in. long, with a dark green margin and a broad, pale lilac or whitish band down the centre. *h.* 5in. Borneo. SYNS. *Anœctochilus lineatus, Haplochilus regium, Monochilus regium.*

ZEUZERA ÆSCULI (Wood Leopard Moth). A handsome Moth, with a spread of wings of from 2in. to 3in. The body is from 1¼in. to 1½in. long, and is rather

FIG. 255. ZEUZERA ÆSCULI (FEMALE).

slender; and the wings are narrower than is usual in Moths. All the wings are semi-transparent white, with numerous spots (see Fig. 255), which are blue-black

Zeuzera Æsculi—*continued.*

on the fore wings, and lighter on the hind wings. The thorax is white, with a row of three large, black spots on each side, and a smaller one behind. The abdomen is grey. The antennæ are slender in the female, but in the male the basal half of each is like a double comb.

FIG. 256. LARVA OF ZEUZERA ÆSCULI.

The larva (see Fig. 256) is cylindrical, naked, yellowish-white, with raised, shining, black spots, a blackish plate on the front of the ring just behind the head, and a black patch on the last segment. It feeds in the wood of living trees—among the kinds attacked by it being Apple, Elm, Horse-Chestnut, Pear, Plum, and Poplar—but seldom does noteworthy injury to them; indeed, Newman observed that infected trees bore even more abundant fruit than perfectly healthy ones. Should remedies be required, the best are the removal (for firewood) of infested trunks, the capture of the Moths on the trees in early morning, and plastering the lower part of the trunk with a mixture of clay and cow's urine. Insecticides may be injected into holes made by the larvæ, should such be found.

ZEXMENIA (an anagram of *Ximenesia*). SYN. *Lipochæte* (in part). ORD. *Compositæ.* A genus embracing about twenty-five species of stove, greenhouse, or hardy, annual or perennial herbs or sub-shrubs, sometimes tall climbers, inhabiting the warmer parts of America. Flower-heads yellow, solitary, corymbose, or sub-umbellate, heterogamous, radiate; involucre variable, the bracts in two, three, or several series; receptacle convex, the pales sheathing the flowers; ray florets ligulate, spreading, entire, or two or three-toothed; disk florets tubular, the apex shortly five-cleft; achenes usually slightly pilose. Leaves opposite, entire or toothed. Only two species call for mention here. They thrive in any fairly rich soil. *Z. aurea* may be increased by cuttings, inserted in sandy soil, under a glass, in heat; and *Z. ovata* may be readily propagated by seeds, sown on the open border.

Z. aurea (golden). *fl.-heads* golden-yellow, solitary and terminal in the upper axils; ray florets seven to nine, twice as long as the involucre. September. *l.* opposite, sessile, ovate-lanceolate, obtuse at base, slightly acuminate at apex, serrated, pubero-scabrous on both sides. Branches terete, villous-canescent. *h.* 1½ft. Mexico, 1829. Half-hardy sub-shrub. SYNS. *Verbesina aurea, Wedelia aurea* (B. M. 3384).

Z. ovata (ovate-leaved). *fl.-heads* deep orange-yellow; ray florets elliptical; peduncles short, terminal, sometimes solitary, sometimes arranged in a kind of corymb. Autumn. *l.* sessile, the basis (scarcely a petiole) amplexicaul, ovate, acute, serrated, triple-nerved, paler beneath. Stem rounded, branched, hairy. *h.* 2ft. Mexico, 1828. Hardy annual. SYN. *Tithonia ovata* (B. M. 3901).

Z. texana (Texan). A synonym of *Wedelia hispida.*

ZICHYA. Included under **Kennedya** (which *see*).

ZIERIA (named after John Zier, a Polish botanist, who was a friend of Smith, the nomenclator). Australian Turmeric-tree. ORD. *Rutaceæ.* A genus comprising half-a-score species of greenhouse, glabrous, hirsute, or tomentose shrubs or small trees, endemic in Australia. Flowers white, usually small, axillary, in small, trichotomous cymes, or rarely solitary; calyx four-cleft; petals four, imbricated or almost valvate in bud, spreading; stamens four. Leaves usually opposite, with three leaflets, rarely alternate or simple. A selection of the introduced species is here given. They thrive in a mixture of sandy loam and peat, and flower at midsummer. Young cuttings root readily in sand, under a glass.

Zieria—*continued.*

Z. arborescens (tree-like). A synonym of *Z. Smithii macrophylla.*

Z. hirsuta (hirsute). A synonym of *Z. pilosa.*

Z. lævigata (smooth). *fl.*, petals three times as long as the calyx; cymes few-flowered, about as long as the leaves. *l.*, leaflets three on a common petiole, linear, pointed, ½in. to 1in. long, the margins closely revolute. *h.* 1½ft. 1822. A glabrous, erect shrub. (B. iv. 185; P. M. B. ix. 77.)

Z. lanceolata (lance-leaved). A synonym of *Z. Smithii.*

Z. macrophylla (large-leaved). A form of *Z. Smithii.*

Z. obcordata (obcordate). *fl.* one to three in the axils, very small, on short, slender pedicels. *l.*, leaflets three, on a very short common petiole, obovate or obcordate, two to four, or rarely six lines long, softly pubescent or tomentose above, more hirsute or velvety and whitish beneath, the margins recurved or revolute. 1824. A shrub of low growth.

Z. pilosa (pilose). *fl.* small, solitary, and nearly sessile, or two or three together on short pedicels. *l.*, leaflets three, on a short common petiole, linear, oblong, or lanceolate, obtuse, ½in. to ¾in., or rarely 1in. long, slightly pubescent or glabrous above, more or less hirsute or tomentose beneath, the margins recurved or revolute. *h.* 4ft. 1822. A shrub or under-shrub, with densely pubescent or hirsute branches. SYN. *Z. hirsuta.*

Z. Smithii (Smith's).* Sandfly Bush; Tasmanian Stinkwood. *fl.* usually about ¼in. in diameter, in axillary, bi- or trichotomous cymes, shorter than the leaves. *l.*, leaflets three, with a distinct common petiole, lanceolate, or the larger ones oblong, elliptic, acute or rarely obtuse, 1in. to 2in. long, flat, or the margins slightly recurved. 1808. A tall shrub or small tree, glabrous or slightly pubescent. (A. B. R. 606; B. M. 1395.) SYN. *Z. lanceolata* (L. B. C. 878).

Z. S. macrophylla (large-leaved). *fl.* larger than in the type. *l.*, leaflets often 3in. long. A more arborescent form. SYNS. *Z. arborescens, Z. macrophylla* (B. M. 4451).

ZIETENIA. A synonym of **Stachys** (which *see*).

ZIGADENUS. *See* **Zygadenus.**

ZILLA (the Arabic or Egyptian name of the plant). ORD. *Cruciferæ.* A small genus (four species) of half-hardy, suffrutescent herbs, inhabiting North Africa, Arabia, and Persia. Flowers white or violet, solitary or loosely racemose, ebracteate. Leaves oblong, toothed, rather thick. Two of the species have been introduced, but probably they are not now in cultivation.

ZINGIBER (from the Greek *Zingiberis*, used by Dioscorides, which is in its turn derived from the Sanscrit, and means in that language horn-shaped; probably in reference to the form of the rhizomes). Including *Zerumbet.* TRIBE *Zingibereæ* of ORD. *Scitamineæ.* A genus comprising about twenty species of stove or greenhouse, perennial herbs, with horizontal, tuberous rhizomes, inhabiting the East Indies, the Malayan Archipelago, and the Mascarene and Pacific Islands. Flowers one to three to a bract, borne in spike-like, dense, cone-formed, or rather long thyrses; calyx tubular, shortly three-lobed; corolla lobes narrow, the upper one erect, incurved, the lateral ones spreading; lip or lips entire or shortly bifid, sometimes slightly crisped. Stems leafy, floriferous or sterile. Several of the species are grown in our hothouses as curiosities. The rhizomes of *Z. officinale* furnish the well-known spice called ginger. The plants here described thrive in a compost of loam, peat, and sand, and require stove heat. They may be increased by divisions. During the winter many die down, and then, until growth begins again, water should be almost withheld.

Z. brevifolium (short-leaved). *fl.* yellow, rather small, with narrow segments, and a narrow, three-lobed lip; spike 2½in. to 3in. long, fusiform, with adpressed, oblong, orange-yellow bracts, striped with red. *l.* few, oblong-lanceolate or elliptic, 2in. to 4in. long, 1¼in. to 1¾in. broad. Stems naked below. *h.* 1ft. Philippine Islands, 1886.

Z. Cassumunar (Cassumunar). Bengal Root. *fl.* pale sulphur; lip four-cleft, the lateral lobes shorter; bracteoles ovate, bilobed; bracts nearly round, reddish, pilose; thyrse ellipsoid; scape 8in. to 14in. long, red-sheathed. July and August. *l.* sessile, lanceolate, pilose beneath and on the sheaths. Stems annual, 3ft. to 5ft. high. Root yellow. East Indies, 1807. (B. M. 1426.)

Z. Cliffordiæ (Lady de Clifford's). *fl.*, corolla white, the segments lanceolate, sub-equal; lip simple; lower bracts broadly cuneate, the upper ones scarlet, margined with green, ovate, obtuse; thyrse ovate; scape 3in. to 4in. long. *l.* long-lanceolate. Stem purplish at base. Guinea. Probably a variety of *Z. Cassumunar.* (A. B. R. 555.)

Z. coloratum (coloured). *fl.* of a creamy-white colour; inflorescence radical, fusiform, acute, densely covered with crimson bracts. *l.* distichous, lanceolate, acuminate, sub-sessile. Stems purplish, leafy, 3ft. high. North-west Borneo, 1879.

Z. elatum (tall). *fl.* of a bright, lively yellow; spikes terminal, solitary, narrow-lanceolate, 6in. long. July and August. *l.* linear, recurved, 1ft. to 1½ft. long, 1in. broad, smooth above, softly white-hairy beneath. Stems straight, 4ft. to 5ft. high. Root tuberous. East Indies, 1820.

Z. officinale (officinal). Ginger. *fl.*, corolla lobes pale yellow, lanceolate; lip dark blue and variegated, three-lobed; bracts imbricated, roundish-ovate, blunt, membranous; spike ovoid, dense, 1½in. to 2in. long; scape radical, 1ft. to 1½ft. high. July. *l.* linear-lanceolate, acuminate, 8in. to 12in. long, tapering towards the bilobed ligule. Sterile stem twice or thrice as long as the scape. East Indies, 1605. (B. M. Pl. 270.)

Z. Parishii (Parish's). *fl.*, corolla straw-coloured, with purple veins; bracts yellow-green, with a scarlet margin; spikes cylindrical, 4in. to 6in. long. July. *l.* elliptic-lanceolate, 4in. to 7in. long. Rhizomes creeping, 3ft. long. *h.* 3ft. Moulmein, 1873. (B. M. 6019.)

Z. Zerumbet (Zerumbet). *fl.* pale sulphur, large; lateral lobes of lip very large; bracts one-flowered; spikes oval, obtuse, about the size of a goose egg, on long peduncles. Summer. *l.* sessile, broadly lanceolate, entire, smooth, waved. Stems annual, 3ft. to 4ft. high. Root white outside, pale yellow within. East Indies, 1690. (B. M. 2000; S. E. B. 112.)

ZINGIBEREÆ. A tribe of *Scitamineæ.*

ZINNIA (named in honour of John Godfrey Zinn, 1727-1759, Professor of Botany at Gottingen). Youth and Old Age. SYNS. *Crassina, Lejica.* ORD. *Compositæ.* A genus embracing about a dozen species of half-hardy,

FIG. 257. FLOWERING BRANCH OF SINGLE STATE OF ZINNIA ELEGANS.

Mexican, annual or perennial herbs or sub-shrubs. Flower-heads variously coloured, heterogamous, radiate, mediocre or large, pedunculate, at the tips or forks of the branches; involucre campanulate or sub-cylindrical, the bracts in three or several series, the outer ones gradually shorter; receptacle conical or at length cylindrical; ray florets

Zinnia—*continued.*

ligulate, spreading, in one series; disk florets tubular, shortly five-cleft at apex; achenes narrow, striated, glabrous or ciliated at the angles. Leaves opposite, entire. The best-known species (all annuals) are here described. They flower during the summer months. *Z. elegans* and *Z. multiflora* last a long time in beauty. Zinnias succeed best in a rich, deep, loamy soil, and in a sunny situation. Seeds should be sown on a gentle hotbed at the end of March or in April, and the young plants thrive best if pricked off in frames when large enough. They should be transferred to the situations in which they are intended to flower early in or about the middle of June. If sown too early, and allowed to become starved previous to the final planting, they never succeed so well afterwards. From *Z. elegans* most of the garden varieties have descended; there are numerous single and double forms, all of which are fine, free-flowering subjects when well grown.

Z. elegans (elegant).* *fl.-heads* scarlet, crimson, rose-coloured, buff, or white; involucral bracts ovate, obtuse, the upper ones margined with black; pales of the receptacle serrate-crested; peduncles cylindrical, solitary, longer than the leaves. *l.* sessile, amplexicaul, cordate-ovate. Stem erect, hairy. *h.* 2ft. 1796. See Fig. 257. The following are varieties: *coccinea*, upper ray florets of a beautiful scarlet (B. R. 1294; P. M. B. i. 223, under name of *Z. violacea coccinea*); *Darwini*, a splendid hybrid; *flore-pleno*, a fine, double-flowered variety (B. H. 1861, p. 201, and 1862, p. 193); *violacea*, upper ray florets purplish-violet (A. B. R. 55, under name of *Z. violacea*; B. M. 527, under name of *Z. elegans*).

Z. Haageana (Haage's). *fl.-heads* similar in size to those of *Z. elegans*; ray florets brilliant golden-yellow or orange. Summer. *l.* sub-sessile or sessile, and, as well as the stems, hairy-pubescent. *h.* 1ft. to 1½ft. Central America (?), 1862. (R. G. 1863, 390.)

Z. hybrida (hybrid). *fl.-heads* scarlet; involucral scales adpressed; pales entire; peduncles terminal, solitary, short. *l.* cordate, somewhat lanceolate, sessile, amplexicaul. Stems erect, pubescent. *h.* 2ft. 1818. Probably a hybrid between *Z. elegans* and *Z. pauciflora*. (B. M. 2123.)

Z. multiflora (many-flowered). *fl.-heads*, involucre campanulate, with adpressed scales; pales obtuse; ray florets scarlet or red; disk yellow; peduncles exceeding the leaves. *l.* scarcely petiolate, ovate-lanceolate. Stems erect, branched, very slightly hairy. *h.* 2ft. 1770. Allied to *Z. pauciflora*. (B. M. 149.)

Z. pauciflora (few-flowered). *fl.-heads* yellow; involucral scales adpressed; pales entire; ray florets obovate, obtuse or one or two-toothed at apex; terminal peduncles striated, obconical, the lateral ones slenderer. *l.* sessile, cordate-lanceolate, somewhat amplexicaul. Stem erect, hairy. *h.* 2ft. 1753.

Z. tenuiflora (slender-flowered). *fl.-heads* on very long, cylindrical peduncles; involucre oblong, the scales adpressed, scarcely margined; ray florets scarlet, seven to eight lines long, entire or bidentate and revolute at apex. *l.* very shortly petiolate, cordate-lanceolate. Stems erect, scarcely pubescent. *h.* 2ft. 1799. (B. M. 555.)

Z. verticillata (whorled). *fl.-heads* red; involucre campanulate, with adpressed scales; ray florets obovate, emarginate at apex, often in two or three series; peduncles short, obconical. *l.* oblong-lanceolate, sometimes crowded in irregular whorls, sometimes spirally disposed. Stems erect, sparsely hairy. *h.* 2ft. 1789. (A. B. R. 189.) "Probably a robust cultivated state of *Z. elegans*" (Hemsley).

ZIZANIA (adapted from *Zizanion*, the old Greek name of some wild grain; it is the word which, in the New Testament, is translated "tares"). Water or Indian Rice. SYNS. *Hydropyrum*, *Melinum*. ORD. *Gramineæ*. A small genus (two species) of tall, hardy, aquatic Grasses, natives of North America. Flowers monœcious; spikelets jointed with the club-shaped pedicels, very deciduous; glumes wanting or rudimentary; panicle ample, terminal. Leaves long and flat. The grain of *S. aquatica* (Canada or Indian Rice; Water Oats) is largely gathered for food by the North-west American Indians. The species have no horticultural value.

ZIZIA. Included under *Carum*.

ZIZIPHORA (from *Zizi*, which is said to be the Indian name of the flower, and *phoreo*, I bear). ORD. *Labiatæ*. A genus comprising about a dozen species of hardy, dwarf, annual herbs or diffuse sub-shrubs, inhabiting Central and Western Asia, and the South Mediterranean region.

Ziziphora—*continued.*

Flowers small, sub-sessile, or on short pedicels; calyx tubular, elongated, bilabiate; corolla tube scarcely exserted, the upper lip erect and entire, the lower one spreading and three-cleft; perfect stamens two; whorls few-flowered, axillary, clustered on the upper part of the stem. Leaves small, entire or few-toothed; floral ones conformed or slightly shorter and broader. The best-known species are here described. Both are half-hardy sub-shrubs, and thrive in any good, light soil. Propagation may be effected by cuttings.

Z. clinopodioides (Clinopodium-like). *fl.* blue-purple; corolla nearly twice as long as the calyx; whorls few, six to ten-flowered, approximating in a rather loose, sub-globose head. June. *l.* at length nearly all ovate, the upper ones narrow, oblong, or ovate, ½in. long, narrowed to short petioles. Branches diffuse, 6in. to 12in. long, often purplish. Siberia, 1821.

Z. c. media (intermediate). *fl.*, calyx pilose. *l.* mostly narrow. (B. M. 906, under name of *Z. serpyllacea*.)

Z. dasyantha (thick-flowered). *fl.* red; calyx very pilose-hispid; corolla shorter than in *Z. clinopodioides*; whorls approximating in an oblong head, or the lower ones distinct. July. *l.* ovate or oblong; floral ones conformed. *h.* 6in. Siberia, 1803. (B. M. 1093, under name of *Z. Pouschkini*.)

ZIZYPHUS (*Zizouf* is the Arabic name of the Lotus). ORD. *Rhamneæ*. A genus comprising about fifty species of stove, greenhouse, or hardy trees or shrubs, often decumbent or sarmentose, and frequently prickly; they inhabit tropical Asia and America, and the temperate regions of both hemispheres. Flowers greenish, small, fascicled or in sessile or pedunculate cymes; calyx with five spreading lobes; petals five, cucullate, deflexed, rarely absent; stamens five. Fruit fleshy or dry, with a woody or bony, one to four-seeded and one to four-celled stone. Leaves sub-bifarious, alternate, usually coriaceous. A selection of the introduced species is here given. The fruits of *Z. vulgaris* are commonly eaten, both fresh and in a dried state, in the Mediterranean region, and afford the jujubes of the shops. *Z. Lotus* is supposed to have yielded the seductive, sweet fruits from which the ancient Lotophagi took their name. An excellent dessert fruit is obtained from *Z. Jujuba*, a species largely cultivated by the Chinese. *Z. spina-Christi* is supposed by some persons to have furnished the crown of thorns placed on our Saviour's head at His Crucifixion. The stove and greenhouse species thrive in a compost of sand, loam, and peat; and ripened cuttings of them root readily in sand, under a glass, those of the stove species requiring heat. The hardy kinds are admirably adapted for planting in shrubberies; they may be propagated by ripened cuttings, inserted in soil, under a glass; or by pieces of the roots.

Z. incurva (incurved). *fl.* in pedunculate, axillary cymes ¾in. long. June. *fr.* ⅜in. long, ellipsoid, two-celled. *l.* 2¾in. long, ovate or ovate-oblong, acute or slightly acuminate, crenate-serrated, glabrous. *h.* 6ft. and upwards. Nepaul, 1823. Hardy, unarmed tree.

Z. Jujuba (Jujube). Jujube-tree. *fl.* in cymes ¾in. long. April. *fr.* ½in. to ¾in. in diameter, globose, fleshy and mealy. *l.* 1in. to 2½in. long, elliptic-ovate to sub-orbicular, dark green and glabrous above, densely woolly-tomentose beneath. Young branches and flowers densely fuscous-tomentose. *h.* 30ft. to 50ft. North Africa, India, Australia, 1759. Greenhouse tree, usually armed. See Fig. 258. (B. F. F. 17; B. F. S. cxlix.; J. B. i. 140.)

Z. Lotus. African or Jujube Lotus. *fr.* yellow, roundish-ovate, small, farinaceous. *l.* ovate-oblong, obsoletely crenated, and, as well as the branchlets, glabrous. Prickles twin, one recurved, the other straight, longer than the petioles. *h.* 2ft. to 4ft. South Europe, North Africa, 1731. Half-hardy shrub.

Z. mucronata (mucronate-leaved). *fl.*, cymes axillary, about as long as the petioles. June. *fr.* red, scarcely the size of a cherry. *l.* petiolate, ovate or cordate-ovate, obtusely acuminate, mucronulate, 1½in. to 2in. long, crenate-serrated, sometimes hairy on the nerves beneath. Branches greyish, flexuous, prickly. *h.* 25ft. South Africa, 1810. Greenhouse tree.

Z. Paliurus (Paliurus). A synonym of *Paliurus aculeatus*.

Z. spina-Christi. Christ's-Thorn. *fl.* on villous-tomentose, corymbose peduncles. August. *fr.* ovate-globose. *l.* ovate, obtuse, toothed, glabrous or pubescent beneath. Branchlets white; prickles twin, spreading, one straight, the other slightly incurved. *h.* 6ft. West Asia, North Africa, Egypt. Hardy shrub.

Z. vulgaris (common). *fl.* few, fascicled in the axils of the

Zizyphus—*continued.*

leaves. August. *fr.* red or black, succulent, ½in. in diameter. *l.* ¾in. to 2½in. long, sub-obliquely ovate, obtuse or sub-acute, crenate-serrated, glabrous. Prickles usually twin. *h.* 6ft. and upwards. South Europe, &c., 1640. Hardy shrub or small tree. (S. F. G. 241.)

ZOMICARPA (from *zoma*, a kind of skirt, and *karpos*, a fruit; the pericarp of the fruit, when ripe, bursts at the bottom and remains, covering the seeds like a skirt). ORD. *Aroideæ* (*Araceæ*). A small genus (three species) of stove, tuberous, perennial herbs, natives of Brazil. Flowers monœcious; perianth none; spathe rather fleshy, persistent, the tube convolute, hooded at base, with connate margins, the throat constricted, the lamina lanceolate, acuminate, reticulate-veined; spadix shorter than, and adnate at base with, the spathe, with a slender appendage; male inflorescence dense, female

Zomicarpa—*continued.*

few-flowered; peduncle slender, equalling the leaves. Leaves appearing before the flowers, long-petiolate, reniform, tripedatisect; segments elliptic-oblong, the lateral ones smaller; petioles sheathing towards the base. The species require similar culture to that recommended for **Staurostigma.**

FIG 258. FRUITING BRANCHLET OF ZIZYPHUS JUJUBA

Z. Pythonium (Pythonium). *fl.*, spathe glaucous-violet; spadix slightly exceeding the spathe tube, the naked part subulate, shorter than the inflorescence; peduncle terete. *l.* reniform; segments five, distant at base, the lateral ones half-lanceolate and ovate-oblong, the middle one broadly elliptic; petioles slender, terete, rather broadly sheathing, thrice as long as the blades. *h.* 1ft. 1860. This plant is regarded as an antidote in cases of serpent bites.

Z. Riedeliana (Riedel's). *fl.*, spathe green; spadix much exceeding the spathe tube, the naked part club-shaped, longer than the inflorescence. *l.* reniform; segments mucronate-cuspi-

Zomicarpa—*continued.*

date, the upper one distant from the approximate lateral ones; petioles thrice as long as the leaves, rather broadly sheathing at base. *h.* 1ft. 1860. (Ref. B. 15.)

Z. Steigeriana (Steiger's). *fl.*, spathe blackish-purple, arched at apex; spadix whitish and dark fuscous-purple, not reaching beyond the middle of the spathe, the appendage club-shaped; peduncle rather longer than the petioles. *l.* green, paler beneath, trisected; segments equal or unequal, oblong- or ovate-lanceolate, acuminate at apex, abruptly cuneate at base; petioles fuscous-spotted and striolate. *h.* 1ft. 1860.

ZOMICARPELLA (a diminutive of *Zomicarpa*). ORD. *Aroideæ* (*Araceæ*). A monotypic genus. The species is a rather small, slender, tuberous-rooted, stove herb, allied to *Zomicarpa*. For culture, *see* **Staurostigma.**

Z. maculata (spotted). *fl.*, inflorescence very small; spathe dull green, 1in. long, lanceolate, spreading out nearly flat, with revolute margins; spadix blackish, 1½in. long, very slender. *l.* ovate, deeply cordate-sagittate at base, dark green, with a series of irregular, pale green blotches arranged around, near the margins, somewhat resembling those of *Caladium marmoratum*, but much smaller. New Grenada, 1881.

ZORNIA (named after John Zorn, of Bavaria, 1739-1799, a botanical author). Including *Myriadenus*. ORD. *Leguminosæ*. A genus consisting of half-a-score species of stove or greenhouse, annual or perennial herbs, all American, one being also found in South Africa. Flowers interruptedly spicate or solitary, on axillary and terminal peduncles. Pods compressed. Leaves digitately two or four-foliolate; leaflets often pellucid-dotted. Several species have been introduced, but they are more curious than beautiful. Probably, *Z. tetraphylla* is no longer in cultivation.

Z. tetraphylla (four-leafleted). *fl.* yellow; bracts glabrous, as long as the pods, five-nerved. July. *fr.*, pods prickly; prickles somewhat scabrous. *l.*, leaflets four, digitate, oblong, acuminate. *h.* 6in. Carolina, 1824. Greenhouse perennial. SYN. *Anonymos bracteata*.

ZOSTERA (from *zoster*, a riband; alluding to the leaves). Grasswrack. SYN. *Alga*. ORD. *Naiadaceæ*. A small genus (four species) of hardy, Grass-like, marine plants, found on various coasts in the temperate zone. Flowers in two parallel series of alternating anthers and carpels on one surface of a linear, membranous, pedunculate spadix, which is inclosed in a sheathing, leaf-like spathe; perianth none. Leaves distichous, sheathing, long-linear. *Z. marina* (Bell Ware; Wrack Grass, &c.) is a British plant, found in muddy and sandy estuaries near low-water mark. *Z. nana* is another native species.

ZOSTEREÆ. A tribe of *Naiadaceæ*.

ZOSTEROSTYLIS (from *zoster*, a riband, and *stylos*, a column; alluding to the band which surrounds the column). *Cryptostylis* is now the correct name. ORD. *Orchideæ*. A small genus (seven species) of stove or greenhouse, terrestrial Orchids; three inhabit the East Indies and the Malayan Archipelago, and the rest are Australian. Flowers rather large, in a loose raceme or spike; sepals and petals sub-equal, very slender, convolute and appearing subulate when the flower opens; lip superior, sessile, with a broad base inclosing the column, contracted above the column, and expanded into an undivided lamina; column very short; scapes leafless, simple, two or many-sheathed; bracts membranous, acute. Leaves few or solitary, on rigid petioles, oblong or narrow, membranous. For culture of *Z. arachnites*, the only species introduced, *see* **Spiranthes.**

Z. arachnites (cobwebby). *fl.* few or many in a loose spike 3in. to 8in. long, sessile; petals dull green, linear, and, as well as the longer sepals, much spreading; lip yellowish, mottled and lined with purple, pubescent or cobwebby, erect, elliptic-ovate or lanceolate, acute, grooved; scape 6in. to 18in. high, the base (and petioles) purple. *l.* long-petiolate, ovate, acuminate, striate-nerved. Root consisting of a few elongated tubers. Ceylon, 1863. (B. M. 5381.)

ZUCCAGNIA. A synonym of **Dipcadi** (which *see*).

ZWINGERA. A synonym of **Simaba** (which *see*).

ZYGADENUS (from *zygos*, a yoke, and *aden*, a gland; the glands are usually arranged in pairs at the base of the perianth segments). Erroneously spelt *Zigadenus*. Including *Amianthemum* and *Anticlea*. ORD. *Liliaceæ*. A genus comprising about a dozen species of hardy, bulbous or rhizomatous plants; one is a native of Siberia, and the rest inhabit North America, extending as far as Mexico. Flowers in a terminal, simple or paniculately-branched raceme; perianth persistent, the segments sometimes connate at base in a very short, turbinate tube, in other cases distinct, sub-equal, flat; stamens six, little shorter than the segments. Leaves radical, or clustered at the base of the stem, long-linear. Stem erect, simple below the inflorescence, with or without a few small leaves. The best-known species are here described; all are North American. A moist, peat soil is best suited to their requirements. Propagation may be readily effected by divisions, or by seeds.

Z. angustifolius (narrow-leaved). *fl.*, perianth white, turning purple, ⅛in. to ¼in. long; lower pedicels five to six lines long; raceme 1in. to 3in. long, ½in. to ¾in. broad. May and June. *l.* nearly 1ft. long, two to three lines broad, firmer and more distinctly ribbed than those of *Z. Muscætoxicum*. Stem slender, 1ft. to 1½ft. high, with many reduced leaves. 1823. SYNS. *Amianthium angustifolium*, *Helonias angustifolia*, *H. læta minor* (B. M. 1540).

Z. elegans (elegant). A synonym of *Z. glaucus*.

Z. Fremonti (Fremont's). *fl.*, perianth cream-coloured, five to six lines long, the segments oblong, obscurely clawed; racemes corymbose, 2in. to 4in. long, simple or paniculate. June. *l.* three or four, linear, rather firm, 1ft. to 1½ft. long, three to four lines broad, acuminate. 1874.

Z. glaberrimus (highly glabrous).* *fl.*, perianth white, five to six lines long, the segments oblong, acute, distinctly clawed; pedicels ascending, three to six lines long; racemes five to ten-flowered, loosely paniculate, 1in. to 2in. long. June. *l.* linear, Grass-like, acuminate, 1ft. to 1½ft. long, three to four lines broad. Stem erect, with many reduced leaves. Rhizome creeping. *h.* 2ft. to 3ft. 1811. SYN. *Helonias bracteata* (B. M. 1703).

Z. glaucus (glaucous-leaved). *fl.*, perianth greenish externally, whitish inside, five to six lines long, the segments oblong, thickly nerved; pedicels ascending, ½in. to 1in. long; racemes loose, 2in. to 4in. long, 1in. to 2in. broad, simple or loosely paniculate. Summer. *l.* four to six, firm, linear, glaucous-green, thickly nerved, 1ft. to 1½ft. long, ¼in. to ½in. broad. Stem 6in. to 2ft. high, with a few reduced leaves. 1828. SYNS. *Z. elegans*, *Helonias glaberrima* (B. M. 1680).

Z. Muscætoxicum (fly-poison). *fl.*, perianth greenish-white, ⅛in. to ¼in. long; lower pedicels ½in. to ¾in. long; raceme dense, oblong, 2in. to 4in. long, 1in. to 1½in. broad. Summer. *l.* many, linear-lorate, membranous, nearly 1ft. long, ¼in. to ¾in. broad, obtuse. Stem slender, 1ft. to 2ft. high, with a few much-reduced leaves, slightly thickened at base. 1758. (R. G. 1121, f. 1.) SYNS. *Amianthium Muscætoxicum*, *Helonias læta* (B. M. 803; L. B. C. 998).

Z. Nuttallii (Nuttall's). *fl.*, perianth white, ⅛in to ¼in. long; racemes often simple, dense above, 2in. to 3in., rarely 4in. to 6in., long; lower pedicels ½in. to ¾in. long. June. *l.* four to six, firm, linear, 1ft. to 1½ft. long, ¼in. to ½in. broad. Stem 6in. to 18in. high, with a few reduced leaves. 1883. (R. G. 1121, f. 2.)

ZYGOGLOSSUM. A synonym of **Cirrhopetalum** (which *see*).

ZYGOMENES. A synonym of **Cyanotis** (which *see*).

ZYGOMORPHOUS. A term applied to anything that can be bisected in only one plane into similar halves.

ZYGOPETALUM (from *zygos*, a yoke, and *petalon*, a petal; in the original species the sepals and petals adhere by their bases). Including *Bollea*, *Galeottia*, *Huntleya*, *Kefersteinia*, *Pescatorea*, *Promenæa*, and *Warscewiczella*. ORD. *Orchideæ*. A genus comprising about fifty species of very handsome, stove or greenhouse, epiphytal Orchids, inhabiting the warmer parts of America. Flowers large and showy; sepals and petals sub-equal, free or very shortly connected at base; lip affixed to the foot of the column, slightly incumbent, forming a short chin, the lateral lobes spreading or erect, clothing the column, the middle one flat and spreading; lip bearing a transverse crest, which, from being ribbed or plaited, has the appearance of a ruff or frill; column incurved, semi-terete, wingless or shortly two-winged at apex, produced in a short foot at base; pollen masses four; floriferous scapes

Zygopetalum—*continued.*

leafless, many-sheathed, one-flowered or terminated by a loose raceme; bracts small or rather broad. Leaves distichous, membranous or rather rigid, slightly plaited or with elevated veins. Stem leafy, short, at length thickening into a pseudo-bulb. The flowers are generally produced during winter—a circumstance which greatly enhances the value of Zygopetalums as decorative objects. The robust species, such as *Z. Mackayi*, may be grown along with *Cattleya Mossiæ*. They should be potted in rough peat and sphagnum, and watered freely when making their growth. During winter, they require only sufficient moisture to keep them from shrivelling. The *Pescatorea* section are much more difficult to manage. The large-leaved kinds may be grown in pans or baskets, using a mixture of peat-fibre, sphagnum, and lumps of charcoal. Some growers place these kinds on flat, dish-like saucers, with several large holes in the bottom, and simply place nodules of peat and charcoal about the roots as they multiply. Others fasten them on to large blocks of birch, placing the plants on the bark side of the block. The small, delicate kinds, such as *Z. graminneum*, thrive best in teak baskets. All the species like plenty of moisture when in full growth, and none should ever be allowed to get quite dry.

Z. africanum (African). A synonym of *Odontoglossum bictonense*.

Z. aromaticum (aromatic). *fl.* solitary, strongly perfumed, 3in. to 4in. across; sepals and petals white, lanceolate, acute; lip azure-blue, darkening to purple at the base, obreniform, many-lobuled, slightly crisped; disk smooth; a many-furrowed callus at the contracted base; scape erect. *l.* cuneate-oblong, acute. Chiriqui. Stove. (G. C. 1868, p. 75; R. X. O. i. 73.) SYNS. *Huntleya aromatica*, *Warscewiczella aromatica*.

Z. Backhousianum (Backhouse's). *fl.*, sepals and petals creamy-white, tipped with bright purplish-violet; lip deeply three-lobed, creamy-white, having a deep yellow callus of nineteen ribs, with brownish lines to the keels, the anterior portion yellowish, with small, purplish warts. Summer. Ecuador, 1877. Allied to *Z. Klabochorum*. Stove. SYN. *Pescatorea Backhousiana*.

Z. Beaumontii (Beaumont's). *fl.* 2in. across; sepals and petals light green, longitudinally striped with pale olive-brown; lip white, dotted and streaked with pale lilac-purple, trifid, the side lobes toothed, incurved, bearing on the disk between them about seven long, parallel, acute crests; scapes erect, one or two-flowered. *l.* plicate, cuneate-oblong, light green. Pseudo-bulbs pyriform, tetragonal. Brazil, 1850. Stove. SYNS. *Batemannia Beaumontii* (R. X. O. iii. 215), *Galeottia Beaumontii*.

Z. bellum (pretty). *fl.* more than 3in. across; sepals and petals light violet, banded near the tip with dark purplish-violet; lip whitish-yellow, somewhat hooded, with a large callus of twenty-one ribs, the keels of which are purplish on their back line, the tip of the lip blotched with purplish-violet; column purplish, with a yellowish-white, triangular space at base, purplish-spotted. Spring. New Grenada, 1878. Intermediate. SYN. *Pescatorea bella*.

Z. brachypetalum (short-petaled).* *fl.*, sepals and petals brown, marbled with green, short, stiff, convex, oblong, obtuse; lip white, veined with deep bluish-violet, transverse, roundish, emarginate, the crest or frill closely striped with blue; scape tall, many-flowered. *l.* lanceolate-ensiform, shorter than the scape. Brazil. Intermediate. (J. H. S. iv. [Proc.], p. 11.)

Z. Burkei (Burke's). *fl.* curiously marked, four or five on a radical scape; sepals and petals green, with thick bands of brown, which here and there break up into spots; lip white, with a ruff of about thirteen crimson plaits or folds. *l.* twin, elongated-lanceolate, acuminate. Pseudo-bulbs clustered, narrow-oblong, furrowed, about 2in. long. Guiana, 1883. Intermediate. (W. O. A. iii. 142.)

Z. candidum (white).* *fl.* 2½in. across; sepals white, lanceolate, acute; petals white, broader, reflexed; lip rosy-purple in the centre, with a broad, bluish margin, quadrate-hastate; disk bearing a large, obtriangular, ivory-white callus, with a retuse, five-toothed apex, and marked with five bluish-purple bars. *l.* few, oblong-ligulate, forming a loose, distichous tuft. *h.* 8in. to 9in. Bahia. Stove. SYNS. *Huntleya candida*, *Warrea candida* (F. d. S. vii., p. 123; L. & P. F. G. i., p. 32), *Warscewiczella candida*.

Z. cerinum (waxy). *fl.* about 3in. across; sepals and petals pale waxy straw-colour, fleshy, concave, the lateral ones rather darker; lip yellow-clawed, convex, retuse, with a thick, semicircular ruff of numerous truncate plaits, within which is sometimes a band of deep purple, surrounding the base of the short, clavate, hoodless column; peduncles axillary, one-flowered, much shorter than the leaves. *l.* tufted, cuneate-oblong, acuminate, 1ft. long. Chiriqui, 1851. Intermediate. (F. d. S. 1815; R. G. 838.) SYNS. *Huntleya cerina* (B. M. 5598; L. & P. F. G. iii., p. 62), *Pescatorea cerina* (F. M. ser. ii. 93; R. X. O. i. 65).

Zygopetalum—*continued.*

Z. citrinum (citron-coloured).* *fl.* of a deep rich yellow, with a dark crimson blotch at the base of the lip, which is obovate in the front, with two oblong, obtuse, erect basal lobes spotted with crimson; scapes deflexed, 2in. to 3in. long, one-flowered. Late summer. *l.* oblong-ligulate, pale green. Pseudo-bulbs clustered, small, ovate, tetragonal, two-leaved. Brazil, 1838. Intermediate. SYN. *Maxillaria citrina*, *Promenæa citrina* (W. O. A. i. 7).

Z. Clayi (Clay's).* *fl.* freely produced; sepals and petals deep purplish-brown, margined, banded, and sometimes blotched, with green; lip deep violet-purple, with darker purple lines, paler at the edges, 1½in. wide, the ruff whitish, with bluish-violet plaits; scapes radical. 1876. A beautiful hybrid between *Z. crinitum* and *Z. maxillare*. Intermediate. (F. M. n. s. 267; W. O. A. 50.)

Z. cochleare (spoon-like). *fl.* white, about 1in. long; sepals and petals ovate, pointed; lip blue-variegated, somewhat quadrate-cordate, emarginate at the broadly rounded summit, crested at the base by a broadly reniform, longitudinally many-plaited callus; peduncles 3in. long, one-flowered. *l.* oblong, acute, tapering at the base, 6in. to 10in. long. West Indies. Stove. (B. M. 3585; B. R. 1857.)

Z. cœleste (sky-blue).* *fl.* 3in. to 4in. across; sepals and the shorter petals light blue at base, deeper mauve in the middle, the marginal tips white; lip deep violet in front, the prominent basal callus yellowish-white; column deep purple-blue, yellow at base; scapes 1½ft. to 1½ft. high. June and July. *l.* close-set, cuneate-oblong. Columbia, 1878. Closely allied to *Z. Lalindei*. Greenhouse. SYN. *Bollea cœlestis* (B. H. 1879, 9; B. M. 6458; R. G. 1075).

Z. crinitum (hairy).* *fl.* large, beautifully variegated; sepals and petals green, barred with brown, oblong-lanceolate; lip white or cream-coloured, streaked with coloured, densely hairy veins, broad-obovate, emarginate; callus yellow, small, incurved; spikes sometimes two from a pseudo-bulb. *l.* lorate-lanceolate, plicate, shorter than the scapes. Pseudo-bulbs ovate. Brazil, 1829. Greenhouse. (L. B. C. 1687.) SYNS. *Z. Mackayi crinitum* (B. M. 3402), *Z. stenochilum* (L. B. C. 1923). "The best variety is that called *cæruleum*, which has the veins of a deep, bright blue. There is another form with the veins pink" (B. S. Williams).

Z. Dayanum (Day's).* *fl.* similar in shape to those of *Z. cerinum*; sepals and petals milky-white, the former tipped with green, oblong-obovate, the latter roundish-rhomboidal; lip white, clawed, emarginate, with a purplish-violet ruff, the base, as well as the rays in front of the callus, purplish-violet; column yellow, with a broad, reddish band at base. New Grenada, 1873. Stove. SYN. *Pescatorea Dayana*. The following varieties are described by B. S. Williams, in the "Orchid Grower's Manual":

Z. D. candidulum (whitish). *fl.*, sepals and petals pure white, lip tinted with purplish-crimson. (G. C. n. s., iii., p. 343, under name of *Pescatorea Dayana candidula*.)

Z. D. rhodacrum (red-tipped). *fl.*, sepals and petals tipped with purplish-rose. (B. M. 6214, under name of *Pescatorea Dayana rhodacra*.)

Z. D. splendens (splendid). *fl.*, sepals and petals blotched at the tips with dark violet; lip deep violet, which colour extends to the base of the column.

Z. discolor (discoloured). *fl.*, sepals and petals straw-coloured, tinged with purple, 1¼in. to 1½in. long, the lower sepals straight, deflexed, the upper erect, forming with the petals an arch over the column and lip; lip deep velvety-purple, white at base, concave, slightly trilobed, with a yellow, roundish-oblong appendage divided at the edge into strong, diverging teeth, five of which terminate so many distinct ribs. Central America. SYNS. *Warrea discolor* (B. M. 4830; L. & P. F. G. i., p. 73), *Warscewiczella discolor* (R. X. O. 93).

Z. Dormanianum (Dorman's). *fl.* white, with some light sulphur on the crest, narrower than in *Z. Klabochorum* and *Z. Lehmanni* (which this plant resembles); lip with a continuous row of angles on the hind margin of the side lobes, and three prolonged, connate, median keels; column sagittate at base. Columbia (?), 1881. Intermediate. SYN. *Pescatorea Dormaniana*.

Z. euglossa (beautiful-lipped). *fl.* of a beautiful lilac colour, similar to those of *Z. Roëzlii*, but with a shorter lip and a broader callus, the tip of the lip bent underneath, ending in two diverging lobes. Ecuador, 1877. SYN. *Pescatorea euglossa*.

Z. expansum (expanded). *fl.*, sepals green, acute; petals brown in the upper part, blotched with brown in the lower, broader than the sepals; lip green, with five interrupted, brown stripes on the basal half, and similar-coloured blotches at the base of the front part, which is fringed. *l.* Grass-like, cuneate-oblong-ligulate, acute. Ecuador (?), 1878.

Z. fimbriatum (fringed). *fl.* about 2in. across; sepals and petals white in the lower and purple in the apical half, elliptic-oblong, acute; lip yellowish-white, with rosy dots, revolute and irregularly fringed on the margins; crest semicircular, composed of seventeen to nineteen dark purple ridges; peduncles short, one-flowered. Columbia, 1880. Intermediate. SYN. *Pescatorea fimbriata* (R. G. 1008).

Z. Gairianum (Gair's).* *fl.* large; sepals and petals deep violet, oblong-ligulate, the anterior part deep black-purple within; lip purplish-rose or light purple-mauve, the front part reflexed on

Zygopetalum—*continued.*

the limb, so as to be nearly hood-shaped, marked by obscure, longitudinal keels, with numerous warts between; ruff of fifteen to seventeen radiating keels, in some forms orange with purple ridges; column dark violet above, whitish-yellow with some purple spots at the base. Ecuador, 1879. Stove. SYN. *Pescatorea Gairiana.*

Z. Gautieri (Gautier's).* *fl.* large; sepals and petals green, blotched and barred with brown, oblong, acute; lip deep purplish-blue, lighter at the edge, the ruff around the column large, and of a deep velvety-purple; racemes drooping, on scapes springing up in the midst of the young leaf-tufts. *l.* elongated-oblong, dark green, plaited. Pseudo-bulbs oblong, deeply furrowed. Brazil, 1868. Greenhouse. (W. O. A. i. 28.) The colour of the lip varies in several varieties from pale mauve (I. H. 1867, 535) to deep bluish-purple.

Z. gemma (gem). *fl.* of a very pale colour, not much exceeding in size those of *Z. sanguinidentum*; lip marked with numerous dark blotches, denticulate and crisped. New Grenada, 1874. A small species. Intermediate. SYN. *Kefersteinia gemma.*

Z. gramineum (grass-like). *fl.* dirty yellow, copiously brown-spotted; petals rather narrower than the sepals; lip broadly oval, gibbous at base beneath, concave in the centre above, the upper half suddenly bending downwards and emarginate at apex, the edge minutely denticulate; scapes three to five, clustered. *l.* about 9in. long, erect or spreading, lanceolate. Pseudo-bulbs none. Popayan, 1857. Intermediate. SYN. *Kefersteinia graminea* (B. M. 5046; R. X. O. 25, ii.)

Z. intermedium (intermediate), of Loddiges. *fl.*, sepals and petals green, tinged with brown, oblong, acute; lip blue, streaked with deep purple, downy-pubescent, large, flat, roundish, bilobed, undulated. Autumn. *l.* ensiform, shorter than the raceme. Brazil, 1844. Reichenbach regards this as a variety of *Z. Mackayi.* Greenhouse. SYN. *Z. velutinum.*

Z. Klabochorum (Klaboch's).* *fl.* 3in. to 3½in. across; sepals oblong, obtuse; petals shorter, cuneate; both white, deeply tipped with chocolate-purple; lip ochre or white, covered with lines of purple-tipped papillæ, trowel-shaped, three-lobed; ruff of nineteen lamellæ, sulphur-coloured, with brown keels; column yellowish, washed with brown and purple. Ecuador, 1879. Intermediate. SYN. *Pescatorea Klabochorum* (I. H. ser. iii. 431; L. & P. F. G., re-issue, 21; W. O. A. i. 17). Of this free-flowering species several varieties have been observed.

Z. K. burfordiensis (Burford).* *fl.* with broader and darker lamellæ on the callus, the broad, middle line of the front part of the lip dark reddish-violet, the whole surface covered with styliform processes. 1879.

Z. K. ornatissimum (very ornamental). A fine variety, with very dark mauve-purple tips, and numerous similar spots at the base, of the petals, and a single spot at the base of the odd sepal. 1884.

Z. lacteum (milk-white). *fl.* white, with a few brownish dots and streaks at the base, small; sepals and petals oblong, acute; lip very broad, cuneate-oblong, retuse; callus depressed, bifid at apex; column dilated in the middle, sometimes angled; peduncles one-flowered. *l.* exceedingly stout, cuneate-oblong, acute. Chiriqui, 1872. Intermediate. SYN. *Kefersteinia lactea.*

Z. Lalindei (Lalind's). *fl.* about 3in. across; sepals and petals lilac at base, pale rose above, or the flowers sometimes bright violet, the upper sepal tipped with green, and the lower part of the lateral ones brownish-purple; lip golden or orange-yellow, with about thirteen close-set lamellæ; column rose-coloured, arched, broader than the lamellate disk; scapes solitary. *l.* elliptic-lanceolate, narrowing to the base, 1ft. long, distichous, five-nerved. New Grenada, 1874. Intermediate. SYN. *Bollea Lalindei* (B. M. 6331).

Z. lamellosum (lamellate). *fl.* 2½in. across, on stout, solitary peduncles 3in. long; sepals and petals yellowish-green, the dorsal sepal elliptic, acute, the lateral one larger, oblong, the petals spathulate; lip yellowish-white, nearly orbicular, cordate at base, the crest orange and brown, much raised, formed of close-set, concentric plates. August. *l.* 1ft. long, narrow-lanceolate, acuminate, narrowed to the base, five-ribbed. Pseudo-bulbs none. Columbia, 1875. Plant densely tufted. Stove. SYN. *Pescatorea lamellosa* (B. M. 6240).

Z. Lawrenceanum (Lawrence's). *fl.* white, solitary, on axillary scapes, 3½in. to 4in. across; sepals and petals blotched with violet or mauve at the tips; lip much shorter than the other parts, nearly square, the sides revolute, the apex of an intense, rich, velvety purple, the basal callus bright yellow, white on each side, large; column white, conspicuous, hooded. *l.* distichous, broadly ligulate, acuminate, keeled. Columbia, 1878. Intermediate. (R. X. O. iii. 221.) SYN. *Bollea Lawrenceana.*

Z. Lehmanni (Lehmann's). *fl.* solitary, axillary, 3in. to 3½in. across, very showy; sepals and petals white, closely lined with reddish-purple, broadly cuneate-oblong: lip deep mauve-purple, the anterior part oblong, revolute, retuse, covered with long, bristle-like, purplish papillæ, the callus of about eleven chestnut-brown ridges. *l.* linear-lorate, acute, 1ft. to 1½ft. high, about 1in. across. Ecuador. Stove. SYN. *Pescatorea Lehmanni* (G. C. n. s., xvii., p. 45; I. H. ser. iii. 471; W. O. A. ii. 57.)

Z. leopardinum (leopard-spotted). *fl.*, sepals and petals light greenish-yellow, spotted with brown; lip with a transverse, obtuse-angled, cordate blade of a beautiful mauve-purple, and an ochreous callus with thirteen teeth. 1886. Garden hybrid. Intermediate.

Z. Mackayi (Mackay's).* *fl.* large, five or six in a raceme; sepals and petals yellowish-green, blotched with brownish-purple, lanceolate; lip white, lined and spotted with purplish-blue, large, roundish, undulated, emarginate, horizontally spreading, the ruff white, striped with blue, large and convex; scape radical, 1½ft. long. *l.* distichous, linear-lanceolate. Pseudo-bulbs large, ovate, scarred, bearing numerous leaves. Brazil, 1825. Greenhouse. (B. M. 2748; L. B. C. 1664; P. M. B. iii. 97.) SYN. *Eulophia Mackaiana* (B. R. 1433). Of this species there are several varieties.

Z. M. crinitum (hairy). A synonym of *Z. crinitum.*

Z. M. intermedium (intermediate), of gardens. *fl.* of a paler colour than in the type, with a fine, large, expanded lip. *l.* longer. A very distinct plant.

Z. marginatum (margined). *fl.* clear straw-colour, with some purple markings on the nearly square appendix to the lip; lateral sepals abruptly bent back, the upper one erect, all tipped with green; petals rolled back above the middle; lip circular, retuse, the edges bent downwards, the claw yellow, with a slight tubercle; column pure white. *l.* pale green, oblong, acute, flat, 6in. long. Columbia. Allied to *Z. discolor.* Intermediate. SYNS. *Warrea quadrata* (B. M. 4766), *Warscewiczella marginata* (R. X. O. 23, f. 2).

Z. maxillare (jaw-shaped).* *fl.* large and showy; sepals and petals green, transversely blotched and barred with chocolate-brown, ovate-oblong, acute; lip rich bluish-purple, with a large, roundish front lobe and a blunt spur; ruff large, deeper purple, shaped like a horse's hoof, and united to the small, erect lateral lobes of the lip; spikes drooping, on radical scapes. *l.* lanceolate, attenuated at base, nerved. Pseudo-bulbs oblong, furrowed. As many as seventy flowers have been produced by one plant. Greenhouse. (B. iii.; B. M. 3686; L. B. C. 1776; P. M. B. iv. 271; R. G. 1879, 345.)

Z. Meleagris (Meleagris). *fl.* 3in. to 4in. across; sepals and petals tessellated, pale yellow on the basal half and purplish-brown upwards, broad at base, the two lateral sepals folded inwards on the inner margin at base; lip about half as large as the petals, similar but clawed, white, tipped with purplish-brown, and having at the base of the claw a crescent-shaped plate, fringed with long, yellowish hairs; peduncles axillary, one-flowered. June and July. *l.* broadly lanceolate, 1ft. long, distichous. Stem short, erect. Brazil. Stove. SYNS. *Batemannia Meleagris* (R. X. O. 66, figs. i., ii.), *Huntleya Meleagris* (B. iii. 146; B. R. 1839, 13).

Z. M. albido-fulvum (whitish-fulvous). *fl.*, upper half of the sepals and petals fulvous, the lower part white; lip and column white, the former tipped with rosy-carmine, the latter with yellowish-green. *l.* light shining green. Stem none. Roots numerous. Brazil, 1868. Intermediate. SYN. *Huntleya albido-fulva* (I. H. 1868, 556).

Z. micropterum (small-winged). *fl.*, sepals and petals creamy-white or ochre; lip white, with three transverse bars of dull crimson on the disk, and small, purple spots at the base, the front lobes elongated, lanceolate, the two lateral ones minute. Summer. Related to *Z. xanthinum.* Intermediate. SYN. *Promenæa microptera.*

Z. Murrayanum (Murray's). *fl.* many in a raceme; sepals and petals greenish, ovate-lanceolate, acute; lip white, the lateral lobes erect, the middle one reflexed, four times as large, purple-spotted at base, the prominent callus yellow, with five straight, violet-brown lines. *l.* lanceolate, striated. Pseudo-bulbs ovate, deeply furrowed. Organ Mountains, 1837. (B. M. 3674.)

Z. mystacinum (moustached). *fl.*, sepals, petals, and blade of the lip yellowish-green; callus and stalk of the lip, and column, white, with purple dots, the blade of the lip broken up into numerous fringes. Otherwise closely resembling *Z. gramineum.* Columbia, 1881. SYN. *Kefersteinia mystacina.*

Z. obtusatum (obtuse). *fl.* disposed in a long raceme; sepals and petals green, with narrow, transverse brown bars, narrow, long, obtuse; lip of a very light violet, with a more purplish, retuse lower callus; bracts obtuse. 1878. This plant is very near *Z. maxillare.*

Z. pallens (pale). *fl.*, sepals and petals light mauve, with greenish-yellow tips, the basal inner borders of the lateral sepals cinnamon-coloured, their lower halves being light yellow; lip light ochre, the orange-coloured callus painted with brownish-purple. 1881. Intermediate. SYN. *Bollea pallens.*

Z. Patinii (Patin's). *fl.* solitary, upwards of 3in. across; dorsal sepal and the oblong, undulated petals rosy-pink, the two lower sepals pink along the upper half, and deep rose along the lower side; lip yellow, short, the disk with a frill of about thirteen lamellæ; column pink, large, convex, arching over the lip; scapes axillary, decurved. *l.* distichous, broadly oblong-ligulate, narrow at base, acute at apex, nerved. New Grenada, 1874. Stove. SYN. *Bollea Patinii* (F. M. ser. ii. 147; G. C. n. s., iii., p. 9).

Z. pentachromum (five-coloured). *fl.*, sepals and petals green,

Zygopetalum—*continued.*

marbled with dark brown; lip white, blotched and lined with mauve, cuneate-obovate; callus or ruff like that of *Z. Mackayi*, with adhering, acute, falcate side lobes. 1885. A hybrid between *Z. Mackayi* and *Z. maxillare*. Greenhouse.

Zygopetalum—*continued.*

in front, and a few parallel ones on the sides; sepals pale greenish or yellowish-white. 1883. SYN. *Warscewiczella picta.*

Z. Rivieri (Rivière's). *fl.* very large, disposed in racemes; sepals and petals green, blotched with light brown; lip white, flabel-

FIG. 259. ZYGOPETALUM SEDENI, showing Habit and detached Inflorescence.

Z. pictum (painted). Much like *Z. discolor*, differing chiefly in the lip, which is rhomboid and crisped, yellowish-white, with numerous, broad, marginal, dark purple lines, brownish basal borders, and a greenish, tablet-like, basal callus, with two teeth lately veined with lilac-rose, and exhaling a perfume similar to that of the Hyacinth. *l.* ensiform, above 1½ft. long. Brazil, 1873. Possibly this may be a large-flowered form of *Z. Mackayi*. (R. H. 1873, 191.)

Zygopetalum—*continued.*

Z. Roëzlii (Roëzl's). *fl.* variable; sepals and petals usually white, beautifully tipped with violet-lilac or purplish-rose, the former oblong, the latter cuneate-obovate; blade of the lip, excepting the callus, of the same showy colours. Ecuador, 1874. Allied to *Z. Dayanum*. Stove. SYN. *Pescatorea Roëzlii*.

Z. Rollissoni (Rollisson's). *fl.*, sepals and petals pale yellow; lip whitish, spotted with crimson, the middle lobe oblong, apiculate, the lateral ones narrow-ovate, acute, resembling two erect bars standing up from the base; scapes deflexed, from the lower axils. Autumn. *l.* oblong-lanceolate, venose. Pseudo-bulbs roundish, compressed, bearing about two leaves at the top and other accessory ones from the base. Brazil, 1843. Intermediate. SYNS. *Maxillaria Rollissoni* (B. R. 1838, 40), *Promenæa Rollissoni*.

Z. rostratum (beaked).* *fl.* 6in. deep; dorsal sepals and two petals whitish at base, then green, marked in the centre with dull brownish-purple, linear-lanceolate, 3in. long; lip nearly 3in. long, ovate, recurved, white, yellowish behind the disk, which bears a small, pale lilac-purple frill or ruff, about ten lines of the same colour radiating from it towards the front; scapes radical, one or two-flowered. *l.* lanceolate, acute, plaited. Rhizome creeping, forming compressed pseudo-bulbs at intervals. This species requires more heat and moisture than any other. Stove. (B. M. 2819; W. O. A. ii. 78.) SYN. *Zygosepalum rostratum* (Ref. B. 106).

Z. Russelianum (Russel's). *fl.* large, freely produced; sepals and petals cream-coloured, tipped with reddish-purple; lip of the same reddish-purple tint, the yellow ruff or callus having fifteen lamellæ with deep crimson-purple angles; column yellowish in front, with a lemon-yellow area at base. Ecuador, 1878. Allied to *Z. Dayanum*. Stove. SYN. *Pescatorea Russeliana*.

Z. sanguinolentum (dark bloody). *fl.* pale straw-coloured or greenish, with dark bloody spots; sepals broadly lanceolate, petals oblong-ovate, both acute; lip cuneate-flabellate, lobulate at apex, undulated, denticulated, the basilar callus dark purple at base, bidentate at apex. *l.* distichous, cuneate-lanceolate, acute, glaucous. Roots adventitious, cylindrical. Caraccas. Intermediate. SYN. *Kefersteinia sanguinolenta* (R. X. O. i. 25, i.).

Z. Sedeni (Seden's).* *fl.* large, in bold racemes; sepals and petals deep purplish-brown, evenly bordered with pale green; lip rich bluish-purple, deeper coloured towards the base, and breaking out into forked veins near the margin, broad, emarginate, the ruff bluish-purple, bold. *l.* narrow-lanceolate, plaited. 1874. A hybrid between *Z. Mackayi* and *Z. maxillare*, and much resembling the latter. See Fig. 259, for which we are indebted to Mr. Wm. Bull. (F. M. ser. ii. 417; R. G. 1883, 280.)

Z. stapelioides (Stapelia-like). *fl.*, sepals and petals greenish-yellow, transversely barred and spotted with dark purple, roundish-ovate, acute; lip deep purple, oblong, three-lobed, the lateral lobes linear, erect, the terminal one ovate-oblong, hooded at base, the margins paler and cross-barred; peduncles deflexed, two-flowered. July to September. *l.* thin, lanceolate, light green. Pseudo-bulbs small, ovate, tetragonal, one or two-leaved. Brazil, 1843. Intermediate. SYNS. *Maxillaria stapelioides* (B. M. 3877; B. R. 1839, 17), *Promenæa stapelioides*.

Z. stenochilum (narrow-lipped). A synonym of *Z. crinitum*.

Z. triumphans (triumphant).* *fl.* fleshy; sepals and petals snowy-white, blue at apex, the former elliptic, apiculate, the latter narrower, cuneate at base; lip blue-black, with a ligulate claw, oblong-rhomboid, emarginate, minutely papillose in the anterior portion; peduncles thick, terete, 4in. to 6in. long. *l.* few, distichous, Grass-like, lanceolate, acute. New Grenada. Stove. SYN. *Pescatorea triumphans* (R. X. O. i. 11).

Z. velatum (veiled). *fl.* yellowish-white, solitary, fragrant; dorsal sepal and petals broadly ovate, acute, the lateral sepals narrow, all spreading upwards; lip margined with crimson, broad, flat, five-lobed, the disk radiately striated with numerous purple-crimson bars; at the base is a stout callus resembling a semicircular row of five to seven teeth; scape rather stout, shorter than the leaves. *l.* few, oblong-ligulate, acute, 9in. long. New Grenada, 1866. Intermediate. SYN. *Warscewiczella velata* (R. H. 1878, 10, f. 4; B. M. 5582; R. X. O. i. 23, f. 1).

Z. velutinum (velvety). A synonym of *Z. intermedium*.

Z. violaceum (violet). *fl.* of a deep rich violet, tipped with greenish-yellow, melting downwards into white, 2in. to 3in. across; sepals and petals curved in at the points, crisped; lip united to the pouch of the lateral sepals by a short, narrow foot; column large, fleshy, curved at apex. *l.* 8in. to 9in. long, erect, acute, tufted. British Guiana, 1835. Stove. SYNS. *Bollea violacea* (R. X. O. 66, iii.), *Huntleya sessiliflora*, *H. violacea*.

Z. Wailesianum (Wailes'). *fl.* of moderate size, scented like Sweet Peas; sepals and petals white or cream-coloured; lip white, stained along the centre with violet, having at the base a crest of five radiating, violet, finger-like bars, which are free except at their origin. Autumn. *l.* dark, evergreen. Brazil. Stove. (B. H. 1878, 10, f. 1; L. & P. F. G. i., p. 73.) SYNS. *Warrea Wailesiana*, *Warscewiczella Wailesiana*.

Z. Wallisii (Wallis').* *fl.* 3in. across; sepals and petals creamy-white, tipped with bluish-violet, the former oblong, apiculate, the latter rhomboid; lip deeper violet, margined with white, oblong, retuse, furrowed, the ruff of seventeen keels white, tinted in front with purple; column white, banded with dark violet at base; scapes short, axillary, one-flowered. *l.* lorate, acuminate. Ecuador, 1869. Greenhouse. SYN. *Pescatorea Wallisii* (F. d. S. 1828).

Z. Wendlandii (Wendland's). *fl.* 4in. to 5in. across; sepals and petals white, lanceolate, somewhat twisted; lip white, blotched and lined with violet-purple, ovate-cordate, many-lobuled, much undulated at the margins, the ruff of seven to nine violet-purple ribs; peduncles stout, axillary. August and September. *l.* tufted, distichous, oblong-ligulate. Costa Rica. A handsome, bulbless species. Stove. SYN. *Warscewiczella Wendlandii*.

Z. W. discolor (discoloured). *fl.* solitary, deliciously scented; sepals and petals yellowish-green; lip white, with a large, bright violet blotch in the centre, much crisped and minutely lobed at the margin, 1½in. broad; peduncles axillary. *l.* light green. Costa Rica. SYN. *Warscewiczella Wendlandii discolor* (W. O. A. iii. 126).

Z. xanthinum (yellow). *fl.* yellow, deeper-coloured towards the centre; sepals and petals oblong, acute, spreading; lip oblong, three-lobed, the lateral lobes profusely spotted, erect, linear, entire, the middle one bilabiate with the upper lip fleshy and five-toothed; bracts cucullate; scapes ascending, one-flowered. *l.* narrow-lanceolate. Pseudo-bulbs oval, tetragonal. Brazil, 1843. Intermediate. SYNS. *Maxillaria xanthina*, *Promenæa xanthina*.

ZYGOPHYLLEÆ. A natural order of shrubs or herbs, very rarely trees, principally inhabiting the hot and extra-tropical regions of both hemispheres. Flowers white, red, or yellow, rarely blue, hermaphrodite; sepals five, rarely four, generally imbricated; petals five or four, very rarely wanting, hypogynous, free, imbricated, or twisted, rarely valvate; disk convex or depressed, rarely annular, inconspicuous, or wanting; stamens usually double, or rarely treble or equal to, the number of petals, biseriate, the outer opposite the sepals; anthers versatile, longitudinally dehiscing; peduncles usually one or two, springing from the axils of the stipules, ebracteate or rarely bibracteolate, one-flowered. Fruit coriaceous or crustaceous, sometimes septicidal and dividing into two to ten cocci, sometimes a loculicidal capsule. Leaves opposite or alternate from the suppression of one, stipulate, bifoliolate or pinnate, rarely three-foliolate; leaflets entire, dotless, sometimes connate; stipules twin, persistent, sometimes spiny. The wood of *Guaiacum* is very hard, and heavier than water; it is employed by cabinet-makers for the manufacture of objects exposed to weight or friction. The order embraces seventeen genera, and about 100 species. Examples: *Chitonia*, *Guaiacum*, *Zygophyllum*.

ZYGOPHYLLUM (from *zygon*, a yoke, and *phyllon*, a leaf; alluding to the pairs of leaflets). Bean Caper. Including *Fabago* and *Rœpera*. ORD. *Zygophylleæ*. A genus comprising about fifty-four species of small, often prostrate shrubs, under-shrubs, or perennial herbs, all, with one exception, confined to the Old World, and mostly found in Australia and South Africa. Flowers white or red, mostly with a purple or red basilar spot; calyx four or five-parted, imbricated; petals four or five-clawed, imbricated and twisted; stamens eight or ten, longer than the petals; peduncles one-flowered, axillary, solitary or rarely two together. Fruit four or five-angled or four or five-winged, capsular. Leaves opposite; leaflets two, very rarely one, often fleshy; stipules two, often spiny. A selection of the introduced species is here given. They should be grown in a compost of loam, peat, and sand. Except where otherwise stated, all require greenhouse treatment. Propagation may be effected by cuttings, inserted in sand, under a glass; or by seeds, when these are obtainable. *Z. Fabago* grows freely in any sunny spot, in dry, well-drained soil.

Z. album (white-flowered). *fl.* on erect pedicels; petals white, crenate, blunt. October and November. *l.*, leaflets cylindrical, club-shaped, fleshy, cobwebby. Stem procumbent. North Africa, 1779. (S. F. G. 371.)

Z. coccineum (scarlet-flowered). *fl.* on erect pedicels; petals scarlet, acuminated. August. *l.*, leaflets cylindrical, fleshy, smooth. *h.* 1ft. 1823. North Africa and Scinde.

Z. cordifolium (cordate-leaved). *fl.* four or five-cleft; petals yellowish, broad, thrice as long as the calyx; peduncles about as

Zygophyllum—*continued.*

long as the leaves. October. *l.* simple, sessile, mostly sub-cordate at base, some oblique at base, or half-cordate. Stem 1ft. or more high, ash-coloured. South Africa, 1774.

Z. Fabago (Fabago). Syrian Bean-Caper. *fl.* on erect pedicels; petals yellow, but of coppery-brick colour at the base, undivided. July to September. *l.*, leaflets flat, smooth, obovate. Root thick, fleshy, striking deeply into the ground. *h.* 1ft. to 4ft. Syria, Tauria, Persia, Afghanistan, &c. Hardy perennial. SYN. *Fabago major* (S. B. F. G. ser. ii. 226).

Z. fœtidum (fœtid). *fl.*, petals orange-yellow, with a purple spot at base, four times longer than the pubescent calyx; peduncles nodding, ½in. long. June. *l.*, leaflets obovate, obtuse, oblique at base, the larger ones 1in. to 1½in. long; petioles ½in. long. Branches herbaceous. *h.* 2ft. to 4ft. South Africa, 1790. Sub-shrub. *Z. insuave* (B. M. 372) is a mere form of this species, with narrower petals.

Z. fruticulosum (small shrub). *fl.* four-cleft; petals yellow; filaments subulate, without wings. July. *l.*, leaflets obliquely oblong or lanceolate, rarely ovate. Australia, 1820. A low, diffuse or divaricately-branched shrub. SYN. *Ræpera fabagifolia.*

Z. f. bilobum (two-lobed). *l.*, leaflets narrow, continuous with the petiole. SYN. *Ræpera aurantiaca.*

Z. fulvum (fulvous). *fl.*, petals fulvous or yellow, with a red basal blotch, twice as long as the calyx; peduncles ½in. to 1in. long, reflexed after flowering. July. *l.* sessile; leaflets lanceolate-ovate, acute, somewhat narrowed at base, the larger ones ten to twelve lines long, very fleshy. *h.* 3ft. South Africa, 1713. (B. M. 2184, under name of *Z. sessilifolium.*)

Z. insuave (disagreeable). A form of *Z. fœtidum.*

Z. Morgsana (Morgsana). *fl.* nodding, four or five-cleft; petals yellow, obovate, thrice as long as the glabrous calyx; peduncles ½in. to ¾in. long. August. *l.* shortly petiolate, the larger ones

Zygophyllum—*continued.*

1in. to 1½in. long; leaflets obovate, obtuse, sub-oblique at base. Stem terete. *h.* 4ft. South Africa, 1732.

Z. spinosum (spiny). *fl.* five-cleft, nodding; petals yellowish or cream-coloured, red-streaked from base to middle or with a purple spot at base, twice or thrice as long as the calyx; peduncles equalling or exceeding the leaves. July. *l.* sessile; leaflets linear, flat or with the margins slightly revolute, acute, fleshy, four to ten lines long. Branches grey. *h.* 1ft. to 2ft. South Africa, 1830.

ZYGOSEPALUM ROSTRATUM. A synonym of **Zygopetalum rostratum** (which *see*).

ZYGOSTATES (from *zygos*, a yoke, and *statos*, standing; alluding to the two processes which stand out horizontally from the base of the column, and together somewhat resemble a yoke). SYN. *Dactylostyles.* ORD. *Orchideæ.* A small genus (three or four species) of dwarf, epiphytal, stove Orchids, found in Brazil. Flowers small, racemose, on axillary peduncles; sepals sub-equal, free, spreading or reflexed; petals similar or broader; lip continuous with the base of the column, spreading, concave, undivided, with an incurved appendage at base; column arched, semi-terete. Leaves fleshy or coriaceous; sheaths scarcely thickened into pseudo-bulbs. Only one species has been introduced. For culture, *see* **Burlingtonia.**

Z. Greeniana (Green's). *fl.*, sepals oblong, obtuse; petals white, ovate, toothleted; lip white, streaked with green, foveate, rounded; peduncles short, two-flowered. *l.* cuneate-ligulate, trigonal, fleshy, superposed. Pseudo-bulbs minute, somewhat pear-shaped, one-leaved. 1869. A curious little plant.

Plants which have been introduced to cultivation in this country since the publication of the various portions of this Work will be described at the end of the Supplement.

DATES OF PUBLICATION.

THE DICTIONARY OF GARDENING having been first issued in the form of Monthly Parts, it is necessary to give here the extent of each part, and the date of its publication. This Table will be found useful in determining the first adoption of a new name, and for other purposes. In several instances, Plants will be found described under their correct names for the first time in any horticultural work.

A	to	Allium	March, 1884	Cleisostoma	to	Corylus	October, 1884
Allium	„	Apple	April, „	Corylus	„	Dahlia	November, „
Apple	„	Aubergine	May, „	Dahlia	„	Dipladenia	December, „
Aubrietia	„	Black Fly	June, „	Dipladenia	„	Eritrichium	January, 1885
Black Fly	„	Caleana	July, „	Eritrichium	„	Freycinetia	February, „
Caleana	„	Celosia	August, „	Freycinetia	„	Gleichenia	March, „
Celosia	„	Cleft	September, „	Gleichenia	„	Hedera	April, „

Dates of Publication—*continued.*

Hedera	to	Hypericum	May,	1885
Hypericum	,,	Karatas	June,	,,
Karatas	,,	Leucoium	July,	,,
Leucoium	,,	Lychnis	August,	,,
Lychnis	,,	Melasphærula	September,	,,
Melasphærula	,,	Mormodes	October,	,,
Mormodes	,,	Nectarine	November,	,,
Nectarine	,,	Oak Galls	December,	,,
Oak Galls	,,	Orange	January,	1886
Orange	,,	Ozothamnus	February,	,,
Pachidendron	,,	Pea	March,	,,
Pea	,,	Peronospora	April,	,,
Peronospora	,,	Phytophthora	May,	,,
Phytophthora	,,	Pleione	June,	,,
Pleios	,,	Populus	July,	,,
Populus	to	Pteris	August,	1886
Pteris	,,	Red Lychnis	September,	,,
Red Maggot	,,	Rosa	October,	,,
Rosa	,,	Sarcochilus	November,	,,
Sarcochilus	,,	Seaside Grounds	December,	,,
Seaside Grounds	,,	Skimmia	January,	1887
Skimmia	,,	Sprengelia	February,	,,
Sprengelia	,,	Strychnos	March,	,,
Strychnos	,,	Thelebolus	April,	,,
Thelebolus	,,	Tradescantia	May,	,,
Tradescantia	,,	Tulipa	June,	,,
Tulipa	,,	Verbena	July,	,,
Verbena	,,	Viscum	August,	,,
Viscum	,,	Xerotes	September,	,,
Xerotes	,,	Zygostates	October,	,,

Supplement to the

DICTIONARY OF GARDENING.

SUPPLEMENT

TO

THE DICTIONARY OF GARDENING.

PREFACE.

THE main object of this Supplement to the DICTIONARY OF GARDENING is to treat in collective groups the plants that have already been dealt with and described individually. Although the alphabetical arrangement of the Dictionary admits of ready reference to any one genus, yet, when the gardener, whether amateur or professional, is called upon to plant a Shrubbery or Rockery, to furnish a Greenhouse or Conservatory, or to select a plant for any particular purpose, he often needs some further assistance. The Supplement will, it is hoped, provide this. In addition, it contains other information of a useful character, much of which is not, so far as we are aware, to be found in any other work on Horticulture. The following are the principal divisions of the Supplement:

Described Genera and their Authors. It has been thought desirable to give an alphabetical list of all the Genera described, together with their Authorities, as the latter have been omitted in the body of the work except in some cases of duplicated generic names.

Pronouncing Dictionary of Ordinal, Generic, and Specific Names. Mispronunciation of Latin and Greek words is, unfortunately, an error of too frequent occurrence amongst horticulturists of all classes: and it is hoped that this division of the Supplement will tend to remedy the evil, and to make pronunciation more uniform than it is.

Herbaceous Plants for Special Purposes. Under this heading are given selections of plants suitable for a variety of purposes, with abbreviated information as to colours of flowers, &c.

Colours of Flowers. This is a somewhat rough classification of the prevailing or ground Colours of the Flowers of herbaceous plants, but it is believed that it will be of great assistance to gardeners who aim at obtaining harmony of colour in floral effects, or who require blossoms of certain hues for any special object.

Shrubs. These are arranged under two divisions, "Deciduous" and "Evergreen," with abbreviated information as to colours of flowers or variegation of leaves. This will be useful when arranging Shrubberies, and even for the ornamental planting of small gardens.

Periods of Flowering. Under each month are given the names of plants then in blossom, together with heights and the colours of the flowers. The value of such information will be readily understood by all who have at any time endeavoured to add to their collections plants which blossom at certain seasons.

Heights of Herbaceous Plants (Hardy and Half-hardy). Arranged under two headings, "Flowering" and "Foliage," and in order of height, this portion of the Supplement will be useful when selecting plants for particular situations. By its help subjects for groups, edgings, and other purposes, may be expeditiously chosen, without fear that on the plants attaining maturity any one species or variety may over-top others to which it was intended that it should be subordinate.

Ferns and Lycopods, Cacti and other Succulents, Bulbous Plants, and Orchids. These are classified according to degrees of hardiness, as a guide to the planting of gardens or the furnishing of houses.

Trees and Shrubs for Special Situations and Soils. These lists will be serviceable to persons laying out plantations, parks, and landscape gardens.

Newly-introduced Plants. The publication of this work in parts has extended over nearly four years, and many plants have been introduced to our gardens since the earlier sheets were printed. These are described in the Supplement, thus bringing the Dictionary up to date.

Animals Beneficial or Injurious to Horticulture. Alphabetical lists of Insects and other Animals mentioned in the body of the work are given, the useful being separated from the Hurtful species for the guidance of gardeners in the extirpation of pests.

It will be easily comprehended that in a First Edition of such matter as this, abundant opportunity is afforded for errors of omission to occur, and in some cases—notably in such divisions as Colours, Periods of Flowering, and Heights of Plants—the information given may be at variance with the experience of the reader; but the Publisher will cordially welcome any corrections for use in future editions.

DESCRIBED GENERA AND THEIR AUTHORS.

IN order to prevent, as far as possible, any misconception as to the identity of garden plants, &c., a list of all the Genera described in this work, with their Authors, is here presented. The frequent duplication in botanical nomenclature will be noticed by any reader who has the DICTIONARY OF GARDENING in frequent use — *e.g.*, the *Reinwardtias* of Dumortier, Blume, and Korthals, and the *Renealmias* of Linnæus, Linnæus, jun., Houttuyn, and R. Brown — and to many amateur gardeners who are anxious to acquire a knowledge of Systematic Botany, this becomes a source of no little confusion.

Bentham and Hooker's "Genera Plantarum" has, for the most part, been taken as the standard of generic limitation in the compilation of this work, at least, so far as Phanerogamous Plants are concerned: in the Ferns, Hooker and Baker's "Synopsis Filicum" has been followed. In several instances, however, it has been thought desirable, for horticultural purposes, to place certain sections of genera under separate headings; *e.g.*, *Amygdalus*, *Azalea*, and *Ligularia*, are included, by Bentham and Hooker, under *Prunus*, *Rhododendron*, and *Senecio*, respectively, but in this work they have been accorded generic rank.

Abelia, R. Brown.
Abies, Jussieu.
Abobra, Naudin.
Abroma, Jacquin.
Abronia, Jussieu.
Abrus, Linnæus.
Abuta, Aublet.
Abutilon, Gærtner.
Acacia, Willdenow.
Acæna, Linnæus.
Acalypha, Linnæus.
Acanthophippium, Blume.
Acantholimon, Boissier.
Acanthophœnix, Wendland.
Acanthorhiza, Wendland.
Acanthostachys, Link, Klotzsch, and Otto.
Acanthus, Linnæus.
Acer, Linnæus.
Aceras, R. Brown.
Aceratium, De Candolle.
Achillea, Linnæus.
Achimenes, P. Browne.
Acineta, Lindley.
Aciotis, Don.
Aciphylla, Forster.
Acis, Salisbury.
Acisanthera, P. Browne.
Acmadenia, Bartling and Wendland.
Acmena, De Candolle.
Aconitum, Linnæus.
Acorus, Linnæus.
Acradenia, Kippist.
Acridocarpus, Guillemin and Perrottet.
Acriopsis, Reinwardt.
Acroclinium, Asa Gray.
Acrocomia, Martius.
Acronychia, Forster.
Acrophyllum, Bentham.
Acrostichum, Linnæus.
Acrotriche, R. Brown.
Actæa, Linnæus.
Actinella, Nuttall.
Actinidia, Lindley.
Actiniopteris, Link.
Actinocarpus, R. Brown.
Actinomeris, Nuttall.
Actinotus, Labillardière.
Ada, Lindley.
Adamia, Wallich.
Adansonia, Linnæus.
Adelobotrys, De Candolle.
Adenandra, Willdenow.
Adenanthera, Linnæus.
Adenanthos, Labillardière.
Adenium, Römer and Schultes.
Adenocalymna, Martius.
Adenocarpus, De Candolle.
Adenophora, Fischer.
Adenostoma, Hooker and Arnott.
Adesmia, De Candolle.
Adhatoda, Nees.
Adiantum, Linnæus.

Genera and their Authors—*continued.*

Adina, Salisbury.
Adlumia, Rafinesque.
Adonis, Linnæus.
Æchmea, Ruiz and Pavon.
Ægiceras, Gærtner.
Ægiphila, Jacquin.
Ægle, Correa.
Æolanthus, Martius.
Aeranthus, Lindley.
Aerides, Loureiro.
Æschynanthus, Jack.
Æschynomene, Linnæus.
Æsculus, Linnæus.
Æthionema, Brown.
Afzelia, Smith.
Agalmyla, Blume.
Aganisia, Lindley.
Aganosma, G. Don.
Agapanthus, L'Héritier.
Agapetes, G. Don.
Agaricus, Linnæus.
Agastachys, R. Brown.
Agathæa, Cassini.
Agathophyllum, Jussieu.
Agathosma, Willdenow.
Agati, Desvaux.
Agave, Linnæus.
Ageratum, Linnæus.
Aglaia, Loureiro.
Aglaonema, Schott.
Agrimonia, Linnæus.
Agrostemma, Linnæus.
Agrostis, Linnæus.
Ailantus, Desfontaines.
Ainsliæa, De Candolle.
Aira, Linnæus.
Aitonia, Linnæus, jun.
Aizoon, Linnæus.
Ajuga, Linnæus.
Akebia, Decaisne.
Alangium, La Marck.
Albizzia, Durazzini.
Albuca, Linnæus.
Alchemilla, Linnæus.
Aletris, Linnæus.
Aleurites, Forster.
Alhagi, Desvaux.
Alibertia, Achille Richard.
Alisma, Linnæus.
Allamanda, Linnæus.
Allantodia, Wallich.
Allium, Linnæus.
Alloplectus, Martius.
Almeidea, St. Hilaire.
Alnus, Gærtner.
Alocasia, Schott.
Aloe, Linnæus.
Alomia, Humboldt, Bonpland, and Kunth.
Alona, Lindley.
Alonsoa, Ruiz and Pavon.
Aloysia, Ortega.
Alpinia, Linnæus.
Alsodeia, Thouars.
Alsophila, Brown.
Alstonia, R. Brown.
Alstrœmeria, Linnæus.
Alternanthera, Forskahl.
Althæa, Linnæus.
Alyssum, Linnæus.
Amarantus, Linnæus.
Amaryllis, Linnæus.
Amasonia, Linnæus, jun.
Ambrosinia, Linnæus.
Amelanchier, Lindley.
Amellus, Linnæus.
Amerimnon, P. Browne.
Amherstia, Wallich.
Amicia, Humboldt, Bonpland, and Kunth.
Ammobium, R. Brown.
Ammodendron, Fischer.
Amomum, Linnæus.
Amorpha, Linnæus.
Amorphophallus, Blume.
Ampelopsis, Michaux.
Amphicarpæa, Elliott.
Amphicome, Royle.
Amphilophium, Kunth.
Amsonia, Walter.
Amygdalus, Linnæus.
Amyris, Linnæus.
Anacampseros, Linnæus.
Anacardium, Rottboell.
Anagallis, Linnæus.
Anagyris, Linnæus.
Ananas, Adanson.
Anantherix, Nuttall.
Anarrhinum, Desfontaines.
Anastatica, Linnæus.
Anchietea, St. Hilaire.
Anchomanes, Schott.
Anchusa, Linnæus.
Andersonia, R. Brown.
Andira, La Marck.
Androcymbium, Willdenow.
Androlepis, Brongniart.
Andromeda, Linnæus.
Andropogon, Linnæus.
Androsace, Linnæus.
Androstephium, Torrey.
Andryala, Linnæus.
Aneilema, R. Brown.
Anemia, Swartz.
Anemone, Linnæus.
Anemonopsis, Siebold and Zuccarini.
Anemopægma, Martius.
Anethum, Linnæus.
Angelica, Linnæus.
Angelonia, Humboldt and Bonpland.
Angiopteris, Smith.
Angophora, Cavanilles.
Angræcum, Thouars.
Anguloa, Ruiz and Pavon.
Anguria, Linnæus.
Anigozanthos, Labillardière.
Anisochilus, Wallich.
Anisomeles, R. Brown.
Anœctochilus, Blume
Anomatheca, Ker.
Anona, Linnæus.
Anopterus, Labillardière.
Ansellia, Lindley.
Antennaria, Gærtner.
Anthemis, Linnæus.
Anthericum, Linnæus.
Anthocercis, Labillardière.
Antholoma, Labillardière.
Antholyza, Linnæus.
Anthospermum, Linnæus.
Anthoxanthum, Linnæus.
Anthurium, Schott.
Anthyllis, Linnæus.
Antiaris, Leschenault.
Antigonon, Endlicher.
Antirrhinum, Linnæus.
Antrophyum, Kaulfuss.
Aotus, Smith.
Apeiba, Aublet.
Aphelandra, R. Brown.
Aphelexis, Bojer.
Aphyllanthes, Linnæus.
Apicra, Willdenow.
Apios, Mœnch.
Apium, Linnæus.
Aplectrum, Nuttall.
Apocynum, Linnæus.
Aponogeton, Thunberg.
Aquilegia, Linnæus.
Arabis, Linnæus.
Arachis, Linnæus.
Aralia, Linnæus.
Araucaria, Jussieu.
Arbutus, Linnæus.
Arctostaphylos, Adanson.
Arctotheca, Wendland.
Arctotis, Linnæus.
Ardisia, Swartz.
Arduina, Linnæus.
Areca, Linnæus.
Arenaria, Linnæus.
Arenga, Labillardière.
Arethusa, Linnæus.
Argania, Römer and Schultes.
Argemone, Linnæus.
Argyreia, Loureiro.
Argyroxyphium, De Candolle.
Arisæma, Martius.
Arisarum, Targioni Tozzetti.
Aristea, Aiton.
Aristolochia, Linnæus.
Aristotelia, L'Héritier.
Armeniaca, Jussieu.
Armeria, Willdenow.
Arnebia, Forskahl.
Arnica, Linnæus.
Arpophyllum, Llave.
Arracacha, De Candolle.
Artabotrys, R. Brown.
Artanema, Don.
Artemisia, Linnæus.
Arthropodium, R. Brown.
Arthrostemma, Ruiz and Pavon.
Artocarpus, Forster.
Arum, Linnæus.
Arundinaria, Michaux.
Arundo, Linnæus.
Asarum, Linnæus.
Asclepias, Linnæus.
Ascyrum, Linnæus.
Asimina, Adanson.
Aspalathus, Linnæus.
Asparagus, Linnæus.
Aspasia, Lindley.
Asperula, Linnæus.
Asphodeline, Reichenbach.
Asphodelus, Linnæus.
Aspidistra, Ker.
Aspidium, Swartz and R. Brown.
Asplenium, Linnæus.
Assonia, Cavanilles.
Astartea, De Candolle.
Astelma, R. Brown.
Astephanus, R. Brown.
Aster, Linnæus.
Asteracantha, Nees.
Astilbe, Hamilton.
Astragalus, Linnæus.
Astrantia, Linnæus.

Genera and their Authors—*continued.*

Astrapæa, Lindley.
Astrocaryum, G. W. Meyer.
Astroloma, R. Brown.
Asystasia, Blume.
Atalantia, Correa.
Athamanta, Linnæus.
Athanasia, Linnæus.
Atherosperma, Labillardière.
Athrixia, Ker.
Athrotaxis, Don.
Atragene, Linnæus.
Atriplex, Linnæus.
Atropa, Linnæus.
Attalea, Humboldt, Bonpland, and Kunth.
Aubrietia, Adanson.
Aucuba, Thunberg.
Audouinia, Brongniart.
Aulax, Bergius.
Avena, Linnæus.
Averrhoa, Linnæus.
Azalea, Linnæus.
Azara, Ruiz and Pavon.

Babiana, Ker.
Babingtonia, Lindley.
Baccharis, Linnæus.
Backhousia, Hooker and Harvey.
Bactris, Jacquin.
Bacularia, F. Mueller.
Bæa, Commerson.
Bæckea, Linnæus.
Bæria, Fischer and Meyer.
Bahia, Lagasca.
Balbisia, Cavanilles.
Balsamodendron, Kunth.
Bambusa, Schreber.
Banisteria, Linnæus.
Banksia, Linnæus, jun.
Baphia, Afzelius.
Baptisia, Ventenat.
Barbacenia, Vandelli.
Barbarea, Brown.
Barbieria, De Candolle.
Barkeria, Knowles and Westcott.
Barklya, F. Mueller.
Barleria, Linnæus.
Barnadesia, Mutis.
Barosma, Willdenow.
Barringtonia, Forster.
Bartonia, Sims.
Basella, Linnæus.
Bassia, Linnæus.
Batatas, Choisy.
Batemannia, Lindley.
Bauera, Banks.
Bauhinia, Linnæus.
Beaucarnea, Lemaire.
Beaufortia, R. Brown.
Beaumontia, Wallich.
Bedfordia, De Candolle.
Befaria, Mutis.
Begonia, Linnæus.
Bellevalia, Lapeyrouse.
Bellidiastrum, Micheli.
Bellis, Linnæus.
Bellium, Linnæus.
Beloperone, Nees.
Benthamia, Lindley.
Berardia, Villars.
Berberidopsis, J. D. Hooker.
Berberis, Linnæus.

Berchemia, Necker.
Bergera, Kœnig.
Berkheya, Ehrhart.
Bertholletia, Humboldt and Bonpland
Bertolonia, Raddi.
Berzelia, Brongniart.
Beschorneria, Kunth.
Besleria, Linnæus.
Bessera, Schultz.
Beta, Linnæus.
Betula, Linnæus.
Biarum, Schott.
Bidens, Linnæus.
Biebersteinia, Stephan.
Bifrenaria, Lindley.
Bigelovia, De Candolle.
Bignonia, Linnæus.
Billardiera, Smith.
Billbergia, Thunberg.
Biophytum, De Candolle.
Biscutella, Linnæus.
Bivonæa, De Candolle.
Bixa, Linnæus.
Blæria, Linnæus.
Blakea, Linnæus.
Blandfordia, Smith.
Blechnum, Linnæus.
Blechum, P. Browne.
Blepharis, Jussieu.
Blephilia, Rafinesque.
Bletia, Ruiz and Pavon.
Blumenbachia, Schrader.
Bobartia, Ker.
Bocconia, Linnæus.
Bœbera, Willdenow.
Bœhmeria, Jacquin.
Boletus, Dillenius.
Boleum, Desvaux.
Boltonia, L'Héritier.
Bomarea, Mirbel.
Bombax, Linnæus.
Bonatea, Willdenow.
Bongardia, C. A. Meyer.
Bonnaya, Link and Otto.
Bonnetia, Martius and Zuccarini.
Borago, Linnæus.
Borassus, Linnæus.
Borbonia, Linnæus.
Boronia, Smith.
Borreria, G. F. W. Meyer.
Boscia, La Marck.
Bossiæa, Ventenat.
Boswellia, Roxburgh.
Botrychium, Swartz.
Boucerosia, Wight and Arnott.
Bouchea, Chamisso.
Bougainvillea, Spach.
Boussingaultia, Humboldt, Bonpland, and Kunth.
Bouvardia, Salisbury.
Bowenia, Hooker.
Bowiea, Harvey.
Brabeium, Linnæus.
Brachychiton, Schott.
Brachycome, Cassini.
Brachylæna, R. Brown.
Brachyotum, Triana.
Brachysema, R. Brown.
Brachyspatha, Schott.
Brachystelma, R. Brown.
Brahea, Martius.
Brainea, Hooker.
Brassavola, R. Brown.

Brassia, R. Brown.
Brassica, Linnæus.
Bravoa, Llave.
Bredia, Blume.
Brexia, Thouars.
Brillantaisia, Palisot de Beauvois.
Briza, Linnæus.
Brodiæa, Smith.
Bromelia, Linnæus.
Bromheadia, Lindley.
Bromus, Linnæus.
Brongniartia, Humboldt, Bonpland, and Kunth.
Brosimum, Swartz.
Broughtonia, R. Brown.
Broussonetia, Ventenat.
Browallia, Linnæus.
Brownea, Jacquin.
Brownlowia, Roxburgh.
Brucea, Miller.
Brunfelsia, Linnæus.
Brunia, Linnæus.
Brunonia, Smith.
Brunsvigia, Heister.
Brya, P. Browne.
Bryanthus, Gmelin.
Bryonia, Linnæus.
Bryophyllum, Salisbury.
Bucklandia, Brown.
Buddleia, Linnæus.
Buettneria, Linnæus.
Bulbine, Linnæus.
Bulbocodium, Linnæus.
Bulbophyllum, Thouars.
Bunchosia, L. C. Richard.
Buphthalmum, Linnæus.
Bupleurum, Linnæus.
Burbidgea, J. D. Hooker.
Burchardia, R. Brown.
Burchellia, R. Brown.
Burlingtonia, Lindley.
Bursaria, Cavanilles.
Bursera, Linnæus.
Burtonia, R. Brown.
Butea, Roxburgh.
Butomus, Linnæus.
Buxus, Linnæus.
Byrsonima, L. C. Richard.
Bystropogon, L'Héritier.

Cabomba, Aublet.
Cacalia, Linnæus.
Cacoucia, Aublet.
Cæsalpinia, Linnæus.
Cajanus, De Candolle.
Cakile, Gærtner.
Caladenia, R. Brown.
Caladium, Ventenat.
Calamagrostis, Adanson.
Calamintha, Mœnch.
Calamus, Linnæus.
Calandrinia, Humboldt, Bonpland, and Kunth.
Calanthe, R. Brown.
Calathea, G. F. W. Meyer.
Calceolaria, Linnæus.
Caldcluvia, Don.
Calea, Linnæus.
Caleana, R. Brown.
Calectasia, R. Brown.
Calendula, Linnæus.
Caliphruria, Herbert.

Genera and their Authors—*continued.*

Calla, Linnæus.
Calliandra, Bentham.
Callicarpa, Linnæus.
Callichroa, Fischer and Meyer.
Callicoma, Andrews.
Calligonum, Linnæus.
Calliprora, Lindley.
Callipsyche, Herbert.
Callipteris, Bory.
Callirhoe, Nuttall.
Callistemon, R. Brown.
Callistephus, Cassini.
Callitris, Ventenat.
Calluna, Salisbury.
Calochilus, R. Brown.
Calochortus, Pursh.
Calodendron, Thunberg.
Calophaca, Fischer.
Calophanes, Don.
Calophyllum, Linnæus.
Calopogon, R. Brown.
Caloscordum, Herbert.
Calostemma, R. Brown.
Calothamnus, Labillardière.
Calotis, R. Brown.
Calotropis, R. Brown.
Caltha, Linnæus.
Calycanthus, Linnæus.
Calycophyllum, De Candolle.
Calycotome, Link.
Calypso, Salisbury.
Calyptranthes, Swartz.
Calyptrocalyx, Blume.
Calyptrogyne, H. Wendland.
Calystegia, R. Brown.
Calythrix, Labillardière.
Camaridium, Lindley.
Camassia, Lindley.
Cambessedesia, De Candolle.
Camellia, Linnæus.
Camoensia, Welwitsch.
Campanea, Decaisne.
Campanula, Linnæus.
Campanumæa, Blume.
Camphora, Nees.
Campsidium, Seemann.
Camptopus, J. D. Hooker.
Canarina, Linnæus.
Canarium, Linnæus.
Canavalia, Adanson.
Canbia, Parry.
Candollea, Labillardière.
Canella, Swartz.
Canistrum, Morren.
Canna, Linnæus.
Cannabis, Linnæus.
Canscora, La Marck.
Cantua, Jussieu.
Capparis, Linnæus.
Capsicum, Linnæus.
Caragana, La Marck.
Caraguata, Lindley.
Carallia, Roxburgh.
Caralluma, R. Brown.
Carapa, Aublet.
Cardamine, Linnæus.
Cardiandra, Siebold and Zuccarini.
Carduncellus, Adanson.
Carduus, Linnæus.
Carex, Linnæus.
Careya, Roxburgh.
Carica, Linnæus.
Carissa, Linnæus.
Carlina, Linnæus.
Carludovica, Ruiz and Pavon.
Carmichælia, R. Brown.
Carpenteria, Torrey.
Carpinus, Linnæus.
Carpodinus, R. Brown.
Carpolyza, Salisbury.
Carthamus, Linnæus.
Carum, Linnæus.
Carya, Nuttall.
Caryocar, Linnæus.
Caryophyllus, Linnæus.
Caryopteris, Bunge.
Caryota, Linnæus.
Casearia, Jacquin.
Casimiroa, Llave.
Cassandra, Don.
Cassebeera, Kaulfuss.
Cassia, Linnæus.
Cassine, Linnæus.
Cassinia, R. Brown.
Cassiope, Don.
Castanea, Gærtner.
Castanospermum, Allan Cunningham.
Castilleja, Linnæus, jun.
Castilloa, Cervantes.
Casuarina, Forster.
Catalpa, Jussieu.
Catananche, Linnæus.
Catasetum, L. C. Richard.
Catesbæa, Linnæus.
Catha, Forskahl.
Cathcartia, J. D. Hooker.
Catoblastus, H. Wendland.
Catopsis, Grisebach.
Cattleya, Lindley.
Caulophyllum, Michaux.
Ceanothus, Linnæus.
Cecropia, Linnæus.
Cedrela, Linnæus.
Cedronella, Mœnch.
Cedrus, Loudon.
Celastrus, Linnæus.
Celosia, Linnæus.
Celsia, Linnæus.
Celtis, Linnæus.
Centaurea, Linnæus.
Centotheca, Desvaux.
Centradenia, G. Don.
Centranthus, De Candolle.
Centronia, Don.
Centropogon, Presl.
Centrosolenia, Bentham.
Cephaelis, Swartz.
Cephalanthera, L. C. Richard.
Cephalanthus, Linnæus.
Cephalaria, Schrader.
Cephalotaxus, Siebold and Zuccarini.
Cephalotus, Labillardière.
Cerastium, Linnæus.
Cerasus, Jussieu.
Ceratiola, Michaux.
Ceratolobus, Blume.
Ceratonia, Linnæus.
Ceratopetalum, Smith.
Ceratopteris, Brongniart.
Ceratostema, Jussieu.
Ceratozamia, Brongniart.
Cerbera, Linnæus.
Cercis, Linnæus.
Cercocarpus, Humboldt, Bonpland, and Kunth.
Cereus, Haworth.
Cerinthe, Linnæus.
Ceropegia, Linnæus.
Ceroxylon, Humboldt and Bonpland.
Cespedesia, Goudot.
Cestrum, Linnæus.
Chænostoma, Bentham.
Chærophyllum, Linnæus.
Chætanthera, Ruiz and Pavon.
Chætocalyx, De Candolle.
Chætogastra, Naudin.
Chamæbatia, Bentham.
Chamæcyparis, Spach.
Chamædorea, Willdenow.
Chamælaucium, Desfontaines.
Chamæpeuce, De Candolle.
Chamæranthemum, Nees.
Chamærhodos, Bunge.
Chamærops, Linnæus.
Chamissoa, Humboldt, Bonpland, and Kunth.
Chaptalia, Ventenat.
Charieis, Cassini.
Chascanum, E. Meyer.
Cheilanthes, Swartz.
Cheiranthus, Linnæus.
Cheirostemon, Humboldt and Bonpland.
Cheirostylis, Blume.
Chelidonium, Linnæus.
Chelone, Linnæus.
Chenopodium, Linnæus.
Chilopsis, Don.
Chimaphila, Pursh.
Chimonanthus, Lindley.
Chiococca, Linnæus.
Chionanthus, Linnæus.
Chionodoxa, Boissier.
Chionographis, Maximowicz.
Chirita, Hamilton.
Chironia, Linnæus.
Chlidanthus, Herbert.
Chloanthes, R. Brown.
Chlora, Linnæus.
Chloris, Swartz.
Chlorogalum, Kunth.
Chlorophytum, Ker.
Chlorospatha, Endlicher.
Chloroxylon, De Candolle.
Choisya, Kunth.
Chomelia, Jacquin.
Chondrorhyncha, Lindley.
Chorispora, De Candolle.
Chorizema, Labillardière.
Chrysalidocarpus, H. Wendland.
Chrysanthemum, Linnæus.
Chrysobactron, J. D. Hooker.
Chrysobalanus, Linnæus.
Chrysocoma, Linnæus.
Chrysogonum, Linnæus.
Chrysophyllum, Linnæus.
Chrysopsis, Nuttall.
Chrysosplenium, Linnæus.
Chysis, Lindley.
Cicca, Linnæus.
Cichorium, Linnæus.
Cienkowskia, Solms.
Cimicifuga, Linnæus.
Cinchona, Linnæus.
Cineraria, Linnæus.
Cinnamodendron, Endlicher.
Cinnamomum, Blume.
Cipura, Aublet.
Circæa, Linnæus.

Genera and their Authors—*continued.*

Cirrhæa, Lindley.
Cirrhopetalum, Lindley.
Cissampelos, Linnæus.
Cissus, Linnæus.
Cistus, Linnæus.
Citharexylum, Linnæus.
Citrullus, Schrader.
Citrus, Linnæus.
Cladrastis, Rafinesque.
Clarkia, Pursh.
Clausena, Burmann.
Clavija, Ruiz and Pavon.
Claytonia, Linnæus.
Cleisostoma, Blume.
Clematis, Linnæus.
Cleome, Linnæus.
Clerodendron, Linnæus.
Clethra, Linnæus.
Cleyera, De Candolle.
Clianthus, Solander.
Clidemia, Don.
Clintonia, Rafinesque.
Clitoria, Linnæus.
Clivia, Lindley.
Clowesia, Lindley.
Clusia, Linnæus.
Cluytia, Linnæus.
Cneorum, Linnæus.
Cnestis, Jussieu.
Cnicus, Linnæus.
Cobæa, Cavanilles.
Coccocypselum, P. Browne.
Coccoloba, Linnæus.
Cocculus, De Candolle.
Cochlearia, Linnæus.
Cochliostema, Lemaire.
Cochlospermum, Kunth.
Cocos, Linnæus.
Codiæum, Rumphius.
Codonopsis, Wallich.
Cœlestina, Cassini.
Cœlia, Lindley.
Cœliopsis, Reichenbach, jun.
Cœlogyne, Lindley.
Coffea, Linnæus.
Coix, Linnæus.
Cola, Schott.
Colchicum, Linnæus.
Coldenia, Linnæus.
Colea, Bojer.
Colebrookia, Smith.
Coleonema, Bartling and Wendland.
Coleus, Loureiro.
Colletia, Commerson.
Collinsia, Nuttall.
Collinsonia, Linnæus.
Collomia, Nuttall.
Colocasia, Schott.
Cologania, Kunth.
Colquhounia, Wallich.
Colubrina, L. C. Richard.
Columellia, Ruiz and Pavon.
Columnea, Linnæus.
Coluria, Brown.
Colutea, Linnæus.
Comaropsis, L. C. Richard.
Comarostaphylis, Zuccarini.
Comarum, Linnæus.
Combretum, Linnæus.
Comesperma, Labillardière.
Commelina, Linnæus.
Comocladia, P. Browne.
Comparettia, Pœppig.
Comptonia, Banks.
Conandron, Siebold and Zuccarini.
Conanthera, Ruiz and Pavon.
Conium, Linnæus.
Connarus, Linnæus.
Conocarpus, Gærtner.
Conospermum, Smith.
Conostegia, Don.
Conostephium, Bentham.
Convallaria, Linnæus.
Convolvulus, Linnæus.
Conyza, Lessing.
Cookia, Sonnerat.
Cooperia, Herbert.
Copaifera, Linnæus.
Copernicia, Martius.
Coprosma, Forster.
Coptis, Salisbury.
Corchorus, Linnæus.
Cordia, Linnæus.
Cordyline, Commerson.
Corema, Don.
Coreopsis, Linnæus.
Corethrostylis, Endlicher.
Coriandrum, Linnæus.
Coriaria, Linnæus.
Coris, Linnæus.
Cornus, Linnæus.
Cornutia, Linnæus.
Corokia, Allan Cunningham.
Coronilla, Linnæus.
Correa, Smith.
Cortusa, Linnæus.
Coryanthes, Hooker.
Corydalis, De Candolle.
Corylopsis, Siebold and Zuccarini.
Corylus, Linnæus.
Corynocarpus, Forster.
Corynophallus, Schott.
Corynostylis, Martius.
Corypha, Linnæus.
Corysanthes, R. Brown.
Coscinium, Colebrooke.
Cosmanthus, Nolte.
Cosmelia, R. Brown.
Cosmibuena, Ruiz and Pavon.
Cosmos, Cavanilles.
Cossignia, Commerson.
Costus, Linnæus.
Cotoneaster, Medikus.
Cotyledon, Linnæus.
Coulteria, Humboldt, Bonpland, and Kunth.
Couroupita, Aublet.
Coursetia, De Candolle.
Cousinia, Cassini.
Coutarea, Aublet.
Coutoubea, Aublet.
Cowania, Don.
Crambe, Linnæus.
Crassula, Linnæus.
Cratægus, Linnæus.
Cratæva, Linnæus.
Crawfurdia, Wallich.
Crepis, Linnæus.
Crescentia, Linnæus.
Crinum, Linnæus.
Cristaria, Cavanilles.
Crithmum, Linnæus.
Crocosmia, Planchon.
Crocus, Linnæus.
Crossandra, Salisbury.
Crotalaria, Linnæus.
Croton, Linnæus.
Crowea, Smith.
Crucianella, Linnæus.
Cryptanthus, Otto and Dietrich.
Cryptochilus, Wallich.
Cryptocoryne, Fischer.
Cryptogramme, R. Brown.
Cryptomeria, Don.
Cryptostegia, R. Brown.
Cryptostemma, R. Brown.
Cucumis, Linnæus.
Cucurbita, Linnæus.
Culcasia, Palisot de Beauvois.
Cunila, Linnæus.
Cunninghamia, R. Brown.
Cunonia, Linnæus.
Cupania, Linnæus.
Cuphea, P. Browne.
Cupressus, Linnæus.
Curatella, Linnæus.
Curculigo, Gærtner.
Curcuma, Linnæus.
Curtisia, Aiton.
Cuscuta, Linnæus.
Cussonia, Thunberg.
Cyananthus, Wallich.
Cyanella, Linnæus.
Cyanophyllum, Naudin.
Cyanotis, Don.
Cyathea, Smith.
Cyathodes, Labillardière.
Cycas, Linnæus.
Cyclamen, Linnæus.
Cycnoches, Lindley.
Cydonia, Tournefort.
Cylista, Aiton.
Cymbidium, Swartz.
Cynanchum, Linnæus.
Cynara, Linnæus.
Cynoglossum, Linnæus.
Cynometra, Linnæus.
Cypella, Herbert.
Cyperus, Linnæus.
Cyphia, Bergius.
Cyphokentia, Brongniart.
Cyphomandra, Sendtner.
Cyphosperma, H. Wendland.
Cypripedium, Linnæus.
Cyrilla, Garden.
Cyrtanthera, Nees.
Cyrtanthus, Aiton.
Cyrtoceras, Bennett.
Cyrtochilum, Humboldt, Bonpland, and Kunth.
Cyrtopodium, R. Brown.
Cyrtostachys, Blume.
Cystacanthus, T. Anderson.
Cystopteris, Bernhardi.
Cytisus, Linnæus.

Dabœcia, Don.
Dacrydium, Solander.
Dactylis, Linnæus.
Dactyloctenium, Willdenow.
Dæmia, R. Brown.
Dæmonorops, Blume.
Dahlia, Cavanilles.
Dais, Linnæus.
Dalbergia, Linnæus. jun.
Dalea, Linnæus.
Dalechampia, Linnæus.
Dalibarda, Linnæus.

Genera and their Authors—*continued.*

Dammara, Lambert.
Damnacanthus, Gærtner.
Dampiera, R. Brown.
Danæa, Smith.
Daphne, Linnæus.
Darlingtonia, Torrey.
Darwinia, Rudge.
Dasylirion, Zuccarini.
Datisca, Linnæus.
Datura, Linnæus.
Daubenya, Lindley.
Daucus, Linnæus.
Davallia, Smith.
Davidsonia, Mueller.
Daviesia, Smith.
Decabelone, Decaisne.
Decaisnea, J. D. Hooker and Thomson.
Decumaria, Linnæus.
Deherainia, Decaisne.
Delabechia, Lindley.
Delarbrea, Vieillard.
Delima, Linnæus.
Delostoma, Don.
Delphinium, Linnæus.
Dendrobium, Swartz.
Dendrochilum, Blume.
Dendromecon, Bentham.
Dendropanax, Decaisne.
Dendroseris, Don.
Dentaria, Linnæus.
Deparia, Hooker and Greville.
Deppea, Chamisso and Schlechtendahl.
Desfontainea, Ruiz and Pavon.
Desmanthus, Willdenow.
Desmodium, Desvaux.
Desmoncus, Martius.
Deutzia, Thunberg.
Diacalpe, Blume.
Dianella, La Marck.
Dianthera, Linnæus.
Dianthus, Linnæus.
Diapensia, Linnæus.
Diascia, Link and Otto.
Dicentra, Borkhausen.
Dichæa, Lindley.
Dichorisandra, Mikan.
Dichrostachys, De Candolle.
Dichrotrichum, Reinwardt.
Dicksonia, L'Héritier.
Dicliptera, Jussieu.
Dictamnus, Linnæus.
Dictyanthus, Decaisne.
Dictyosperma, H. Wendland.
Dictyoxiphium, Hooker.
Dicyrta, Regel.
Didymocarpus, Wallich.
Didymochlæna, Desvaux.
Didymosperma, H. Wendland and Drude.
Dieffenbachia, Schott.
Diervilla, Tournefort.
Digitalis, Linnæus.
Dilatris, Bergius.
Dillenia, Linnæus.
Dillwynia, Smith.
Dimorphanthus, Miquel.
Dimorphotheca, Mœnch.
Dionæa, Ellis.
Dioon, Lindley.
Dioscorea, Linnæus.
Diosma, Linnæus.
Diospyros, Linnæus.
Diotis, Desfontaines.
Dipcadi, Medikus.
Diphylleia, Michaux.
Diphysa, Jacquin.
Diplacus, Nuttall.
Dipladenia, Alphonse de Candolle.
Diplolæna, Brown.
Diplothemium, Martius.
Dipsacus, Linnæus.
Dipteryx, Schreber.
Dirca, Linnæus.
Disa, Bergius.
Discaria, Hooker.
Dischidia, R. Brown.
Disocactus, Pfeiffer.
Disporum, Salisbury.
Disteganthus, Lemaire.
Distylium, Siebold and Zuccarini.
Diuris, Smith.
Dodecatheon, Linnæus.
Dolichos, Linnæus.
Doliocarpus, Roland.
Dombeya, La Marck.
Doodia, R. Brown.
Dorema, Don.
Doronicum, Linnæus.
Dorstenia, Linnæus.
Doryanthes, Correa da Serra.
Dorycnium, Villars.
Dossinia, Morren.
Douglasia, Lindley.
Downingia, Torrey.
Draba, Linnæus.
Dracæna, Linnæus.
Dracocephalum, Linnæus.
Dracontium, Linnæus.
Dracophyllum, Labillardière.
Dracunculus, Schott.
Drakæa, Lindley.
Drepanocarpus, G. A. F. W. Meyer.
Drimia, Jacquin.
Drimiopsis, Lindley.
Drimys, Forster.
Drosera, Linnæus.
Drosophyllum, Link.
Dryandra, R. Brown.
Dryas, Linnæus.
Drymoda, Lindley.
Drymoglossum, Presl.
Drymonia, Martius.
Drymophlœus, Zippel.
Dryobalanops, Gærtner.
Drypetes, Vahl.
Drypis, Linnæus.
Duboisia, R. Brown.
Dumasia, De Candolle.
Duranta, Linnæus.
Durio, Linnæus.
Duvalia, Haworth.
Duvaua, Kunth.
Dyckia, Schultes.
Dypsis, Noronha.
Dysodia, Cavanilles.

Earina, Lindley.
Ebenus, Linnæus.
Ebermaiera, Nees.
Ecballium, L. C. Richard.
Eccremocarpus, Ruiz and Pavon.
Echidnium, Schott.
Echidnopsis, J. D. Hooker.
Echinacea, Mœnch.
Echinocactus, Link and Otto.
Echinops, Linnæus.
Echinopsis, Zuccarini.
Echinospermum, Swartz.
Echites, Linnæus.
Echium, Linnæus.
Edgeworthia, Meissner.
Ehretia, Linnæus.
Eichhornia, Kunth.
Ekebergia, Sparrmann.
Elæagnus, Linnæus.
Elæis, Jacquin.
Elæocarpus, Linnæus.
Elæodendron, Jacquin, jun.
Elettaria, Maton.
Eleusine, Gærtner.
Elisena, Herbert.
Elleanthus, Presl.
Elliottia, Muhlenberg.
Elodea, Michaux.
Elymus, Linnæus.
Embelia, Jussieu.
Embothrium, Forster.
Emmenanthe, Bentham.
Empetrum, Linnæus.
Empleurum, Solander.
Encephalartos, Lehmann.
Enkianthus, Loureiro.
Entada, Adanson.
Entelea, Brown.
Eomecon, Hance.
Epacris, Cavanilles.
Ephedra, Linnæus.
Epidendrum, Linnæus.
Epigæa, Linnæus.
Epilobium, Linnæus.
Epimedium, Linnæus.
Epipactis, R. Brown.
Epiphyllum, Pfeiffer.
Epipremnum, Schott.
Episcia, Martius.
Epistephium, Kunth.
Equisetum, Linnæus.
Eragrostis, Palisot de Beauvois.
Eranthemum, Linnæus.
Eranthis, Salisbury.
Ercilla, Adrien de Jussieu.
Eremia, Don.
Eremostachys, Bunge.
Eremurus, Bieberstein.
Eria, Lindley.
Erianthus, Michaux.
Erica, Linnæus.
Ericinella, Klotzsch.
Erigeron, Linnæus.
Erinus, Linnæus.
Eriocaulon, Linnæus.
Eriochilus, R. Brown.
Eriocnema, Naudin.
Eriodendron, De Candolle.
Eriogonum, Michaux.
Eriophorum, Linnæus.
Eriophyllum, Lagasca.
Eriopsis, Lindley.
Eriosema, De Candolle.
Eriospermum, Jacquin.
Eriostemon, Smith.
Erithalis, Linnæus.
Eritrichium, Schrader.
Erodium, L'Héritier.
Eryngium, Linnæus.
Erysimum, Linnæus.
Erythea, S. Watson.
Erythræa, L. C. Richard.

Genera and their Authors—*continued.*

Erythrina, Linnæus.
Erythrochiton, Nees and Martius.
Erythronium, Linnæus.
Erythrophlœum, Afzelius.
Erythroxylon, Linnæus.
Escallonia, Linnæus, jun.
Eschscholtzia, Chamisso.
Espeletia. Humboldt and Bonpland.
Euadenia, Oliver.
Eucalyptus, L'Héritier.
Euchætis, Bartling and Wendland.
Eucharidium, Fischer and Meyer.
Eucharis, Planchon.
Euchlæna, Schrader.
Euclea, Linnæus.
Eucomis, L'Héritier.
Eucrosia, Ker.
Eucryphia, Cavanilles.
Eugenia, Linnæus.
Eulalia, Trinius.
Eulophia, R. Brown.
Eunomia, De Candolle.
Euonymus, Linnæus.
Eupatorium, Linnæus.
Euphorbia, Linnæus.
Euphrasia, Linnæus.
Eupomatia, R. Brown.
Eurya, Thunberg.
Euryale, Salisbury.
Eurycles, Salisbury.
Eurygania, Klotzsch.
Euscaphis, Siebold and Zuccarini.
Eustegia, R. Brown.
Eustoma, Salisbury.
Eustrephus, R. Brown.
Eutaxia, R. Brown.
Euterpe, Gærtner.
Evolvulus, Linnæus.
Exacum, Linnæus.
Exochorda, Lindley.
Exostemma, L. C. Richard.
Eysenhardtia, Humboldt, Bonpland, and Kunth.

Faba, Tournefort.
Fabiana, Ruiz and Pavon.
Fadyenia, Hooker.
Fagelia, Necker.
Fagopyrum, Gærtner.
Fagræa, Thunberg.
Fagus, Linnæus.
Falkia, Linnæus, jun.
Fallugia, Endlicher.
Faramea, Aublet.
Farsetia, Desvaux.
Fatsia, Decaisne and Planchon.
Fedia, Mœnch.
Felicia, Cassini.
Fernandezia, Lindley.
Fernelia, Commerson.
Feronia, Correa.
Ferraria, Linnæus.
Ferula, Linnæus.
Festuca, Linnæus.
Fevillea, Linnæus.
Ficus, Linnæus.
Fieldia, Allan Cunningham.
Fischeria, De Candolle.
Fittonia, E. Coëmans.
Fitzroya, J. D. Hooker.
Flacourtia, Commerson.
Flaveria, Jussieu.
Flindersia, Brown.
Fluggea, Willdenow.
Fœniculum, Adanson.
Fœtidia, Commerson.
Fontanesia, Labillardière.
Forrestia, A. Richard.
Forsythia, Vahl.
Fothergilla, Linnæus.
Fouquiera, Humboldt, Bonpland, and Kunth.
Fragaria, Linnæus.
Francoa, Cavanilles.
Frankenia, Linnæus.
Frasera, Walter.
Fraxinus, Linnæus.
Freesia, Klatt.
Fremontia, Torrey.
Freycinetia, Gaudichaud.
Freziera, Swartz.
Friesia, De Candolle.
Fritillaria, Linnæus.
Frœlichia, Mœnch.
Fuchsia, Linnæus.
Fugosia, Jussieu.
Fumana, Dunal.
Fumaria, Linnæus.
Funkia, Sprengel.
Furcræa, Ventenat.

Gærtnera, La Marck.
Gagea, Salisbury.
Gagnebina, De Candolle.
Gaillardia, Fougère.
Galactites, Mœnch.
Galactodendron, Humboldt, Bonpland, and Kunth.
Galanthus, Linnæus.
Galax, Linnæus.
Galaxia, Thunberg.
Galeandra, Lindley.
Galega, Linnæus.
Galeola, Loureiro.
Galeopsis, Linnæus.
Galipea, Aublet.
Galium, Linnæus.
Galphimia, Cavanilles.
Galtonia, Decaisne.
Garcinia, Linnæus.
Gardenia, Linnæus.
Gardoquia, Ruiz and Pavon.
Garrya, Douglas.
Garuga, Roxburgh.
Gasteria, Duval.
Gastonia, Commerson.
Gastrodia, R. Brown.
Gastrolobium, R. Brown.
Gaudichaudia, Humboldt, Bonpland, and Kunth.
Gaultheria, Linnæus.
Gaura, Linnæus.
Gaussia, H. Wendland.
Gaylussacia, Humboldt, Bonpland, and Kunth.
Gazania, Gærtner.
Geaster, Persoon.
Geissois, Labillardière.
Geissomeria, Lindley.
Geissorhiza, Ker.
Gelasine, Herbert.
Gelsemium, Jussieu.
Genipa, Linnæus.
Genista, Linnæus.
Gentiana, Linnæus.
Geodorum, Jackson.
Geoffræa, Linnæus.
Geonoma, Willdenow.
Geranium, Linnæus.
Gerardia, Linnæus.
Gesnera, Martius.
Gethyllis, Linnæus.
Geum, Linnæus.
Gilia, Ruiz and Pavon.
Gilibertia, Ruiz and Pavon.
Gillenia, Mœnch.
Gilliesia, Lindley.
Ginkgo, Linnæus.
Gladiolus, Linnæus.
Glaucium, Jussieu.
Glaux, Linnæus.
Gleditschia, Linnæus.
Gleichenia, Smith.
Globba, Linnæus.
Globularia, Linnæus.
Gloriosa, Linnæus.
Glossodia, R. Brown.
Glossula, Lindley.
Gloxinia, L'Héritier.
Glycine, Linnæus.
Glycosmis, Correa.
Glycyrrhiza, Linnæus.
Glyphæa, J. D. Hooker.
Glyphosperma, S. Watson.
Gmelina, Linnæus.
Gnaphalium, Linnæus.
Gnidia, Linnæus.
Godoya, Ruiz and Pavon.
Goethea, Nees and Martius.
Gomphia, Schreber.
Gomphocarpus, R. Brown.
Gompholobium, Smith.
Gomphrena, Linnæus.
Gonatanthus, Klotzsch.
Gongora, Ruiz and Pavon.
Gonocalyx, Planchon and Linden.
Gonolobus, Michaux.
Goodenia, Smith.
Goodia, Salisbury.
Goodyera, R. Brown.
Gordonia, Ellis.
Gossypium, Linnæus.
Gouania, Linnæus.
Govenia, Lindley.
Grabowskia, Schlechtendahl.
Grammangis, Reichenbach, jun.
Grammanthes, De Candolle.
Grammatocarpus, Presl.
Grammatophyllum, Blume.
Graptophyllum, Nees.
Gratiola, Linnæus.
Gravesia, Naudin.
Greigia, Regel.
Grevillea, R. Brown.
Grewia, Linnæus.
Greyia, Hooker and Harvey.
Grias, Linnæus.
Griffinia, Ker.
Grindelia, Willdenow.
Griselinia, Forster.
Grislea, Linnæus.
Grobya, Lindley.
Gronovia, Linnæus.
Guaiacum, Linnæus.
Guarea, Linnæus.
Guatteria, Ruiz and Pavon.
Guazuma, Plumier.

Genera and their Authors—*continued.*

Guettarda, Linnæus.
Guevina, Molina.
Guichenotia, J. Gay.
Guilielma, Martius.
Gundelia, Linnæus.
Gunnera, Linnæus.
Gustavia, Linnæus.
Gutierrezia, Lagasca.
Guzmania, Ruiz and Pavon.
Gymnadenia, R. Brown.
Gymnema, R. Brown.
Gymnocladus, La Marck.
Gymnogramme, Desvaux.
Gymnolomia, Humboldt, Bonpland, and Kunth.
Gymnostachys, R. Brown.
Gymnostachyum, Nees.
Gynandropsis, De Candolle.
Gynerium, Humboldt and Bonpland.
Gynura, Cassini.
Gypsophila, Linnæus.

Habenaria, Willdenow.
Haberlea, Frivaldsky.
Hablitzia, Bieberstein.
Habranthus, Herbert.
Hacquetia, Necker.
Hæmanthus, Linnæus.
Hæmaria, Lindley.
Hæmatoxylon, Linnæus.
Hæmodorum, Smith.
Hakea, Schrader.
Halesia, Linnæus.
Halimodendron, Fischer.
Halleria, Linnæus.
Hallia, Thunberg.
Hamamelis, Linnæus.
Hamelia, Jacquin.
Hamiltonia, Roxburgh.
Hancornia, Gomez.
Haplopappus, Cassini.
Hardenbergia, Bentham.
Hardwickia, Roxburgh.
Haronga, Thouars.
Harpagophytum, De Candolle.
Hartogia, Thunberg.
Hartwegia, Lindley.
Haworthia, Duval.
Hebecladus, Miers.
Hebenstretia, Linnæus.
Hechtia, Klotzsch.
Hedera, Linnæus.
Hedwigia, Swartz.
Hedychium, Kœnig.
Hedysarum, Linnæus.
Hedyscepe, H. Wendland.
Heeria, Schlechtendahl.
Heinsia, De Candolle.
Heisteria, Linnæus.
Helenium, Linnæus.
Heliamphora, Bentham.
Helianthemum, Persoon.
Helianthus, Linnæus.
Helichrysum, Gærtner.
Helicodiceros, Schott.
Heliconia, Linnæus.
Helicteres, Linnæus.
Helinus, E. Meyer.
Heliocarpus, Linnæus.
Heliophila, Linnæus.
Heliopsis, Persoon.
Heliotropium, Linnæus.
Helipterum, De Candolle.
Helleborus, Linnæus.
Helmholtzia, F. Mueller.
Helmia, Kunth.
Helminthostachys, Kaulfuss.
Helonias, Linnæus.
Helwingia, Willdenow.
Hemerocallis, Linnæus.
Hemiandra, R. Brown.
Hemichæna, Bentham.
Hemimeris, Thunberg.
Hemionitis, Linnæus.
Hemiphragma, Wallich.
Hemitelia, Brown.
Heptapleurum, Gærtner.
Heracleum, Linnæus.
Herbertia, Sweet.
Heritiera, Aiton.
Hermannia, Linnæus.
Herminiera, Guillemin and Perrottet.
Herminium, Linnæus.
Hernandia, Linnæus.
Herniaria, Linnæus.
Herpestis, Gærtner, jun.
Herrania, Goudot.
Herreria, Ruiz and Pavon.
Hesperantha, Ker.
Hesperis, Linnæus.
Hessea, Herbert.
Heteranthera, Ruiz and Pavon.
Heteropappus, Lessing.
Heteropterys, Kunth.
Heterospathe, Scheffer.
Heterotheca, Cassini.
Heterotoma, Zuccarini.
Heterotropa, Morren and Decaisne.
Heuchera, Linnæus.
Hevea, Aublet.
Hexaglottis, Ventenat.
Hibbertia, Andrews.
Hibiscus, Linnæus.
Hieracium, Linnæus.
Hierochloe, Gmelin.
Hillia, Jacquin.
Hindsia, Bentham.
Hippeastrum, Herbert.
Hippia, Linnæus.
Hippobromus, Ecklon and Zeyher.
Hippocrepis, Linnæus.
Hippomane, Linnæus.
Hippophae, Linnæus.
Hippuris, Linnæus.
Hodgsonia, Joseph D. Hooker and Thomson.
Hoffmannia, Swartz.
Holbœllia, Wallich.
Holcus, Linnæus.
Holmskioldia, Retz.
Homalanthus, A. Jussieu.
Homalomena, Schott.
Homeria, Ventenat.
Homogyne, Cassini.
Honckenya, Willdenow.
Hoodia, Sweet.
Hordeum, Linnæus.
Horminum, Linnæus.
Horsfieldia, Blume.
Hosackia, Douglas.
Hottonia, Linnæus.
Houlletia, A. Brongniart.
Houstonia, Linnæus.
Houttea, Decaisne.
Houttuynia, Thunberg.
Hovea, R. Brown.
Hovenia, Thunberg.
Howea, Beccari.
Hoya, R. Brown.
Hudsonia, Linnæus.
Huernia, R. Brown.
Humea, Smith.
Humulus, Linnæus.
Hunnemannia, Sweet.
Hura, Linnæus.
Hutchinsia, Brown.
Hyacinthus, Linnæus.
Hybernia, Latreille.
Hydnum, Linnæus.
Hydrangea, Linnæus.
Hydrastis, Linnæus.
Hydriastele, H. Wendland and Drude.
Hydrocharis, Linnæus.
Hydrolea, Linnæus.
Hydropeltis, Michaux.
Hydrophyllum, Linnæus.
Hymenæa, Linnæus.
Hymenandra, Alphonse de Candolle.
Hymenanthera, R. Brown.
Hymenocallis, Salisbury.
Hymenodictyon, Wallich.
Hymenophyllum, Linnæus.
Hyophorbe, Gærtner.
Hyoscyamus, Linnæus.
Hyospathe, Martius.
Hypecoum, Linnæus.
Hypericum, Linnæus.
Hyphæne, Gærtner.
Hypocalymma, Endlicher.
Hypocalyptus, Thunberg.
Hypocyrta, Martius.
Hypoderris, Brown.
Hypoëstes, R. Brown.
Hypolepis, Bernhardi.
Hypolytrum, L. C. Richard.
Hypoxis, Linnæus.
Hyssopus, Linnæus.

Ibbetsonia, Sims.
Iberidella, Boissier.
Iberis, Linnæus.
Icacina, A. Jussieu.
Ichnocarpus, R. Brown.
Idesia, Maximowicz.
Ilex, Linnæus.
Illecebrum, Linnæus.
Illicium, Linnæus.
Imantophyllum, Hooker.
Impatiens, Linnæus.
Incarvillea, Jussieu.
Indigofera, Linnæus.
Inga, Willdenow.
Inocarpus, Forster.
Inula, Linnæus.
Iochroma, Bentham.
Ione, Lindley.
Ionidium, Ventenat.
Ionopsidium, Reichenbach.
Ionopsis, Humboldt, Bonpland, and Kunth.
Iostephane, Bentham.
Ipomœa, Linnæus.
Iresine, Linnæus.
Iriartea, Ruiz and Pavon.
Iris, Linnæus.
Isatis, Linnæus.
Ischarum, Blume.

Genera and their Authors—*continued.*

Isertia, Schreber.
Isochilus, R. Brown.
Isoloma, Bentham.
Isomeris, Nuttall.
Isonandra, Wight.
Isoplexis, Lindley.
Isopogon, R. Brown.
Isopyrum, Linnæus.
Isotoma, Lindley.
Isotropis, Bentham.
Itea, Linnæus.
Ixanthus, Grisebach.
Ixia, Linnæus.
Ixiolirion, Herbert.
Ixodia, R. Brown.
Ixora, Linnæus.

Jaborosa, Jussieu.
Jacaranda, Jussieu.
Jacksonia, R. Brown.
Jacobinia, Moricand.
Jacquemontia, Choisy.
Jacquinia, Linnæus.
Jamesia, Torrey and Gray.
Jamesonia, Hooker and Greville.
Jasione, Linnæus.
Jasminum, Linnæus.
Jateorhiza, Miers.
Jatropha, Linnæus.
Jeffersonia, Barton.
Jerdonia, Wight.
Juanulloa, Ruiz and Pavon.
Jubæa, Humboldt, Bonpland, and Kunth.
Juglans, Linnæus.
Juncus, Linnæus.
Juniperus, Linnæus.
Jurinea, Cassini.
Jussiæa, Linnæus.
Justicia, Linnæus.

Kadsura, Kæmpfer.
Kæmpferia, Linnæus.
Kageneckia, Ruiz and Pavon.
Kalanchoe, Adanson.
Kalmia, Linnæus.
Karatas, Adanson.
Kaulfussia, Blume.
Kennedya, Ventenat.
Kentia, Blume.
Kentiopsis, Brongniart.
Kentrophyllum, Necker.
Keramanthus, J. D. Hooker.
Kerria, De Candolle.
Kielmeyera, Martius.
Kingia, R. Brown.
Kitaibelia, Willdenow.
Kleinhovia, Linnæus.
Klugia, Schlechtendahl.
Knightia, R. Brown.
Kniphofia, Mœnch.
Knowltonia, Salisbury.
Knoxia, Linnæus.
Kœllikeria, Regel.
Koëlreuteria, Laxmann.
Kœniga, Brown.
Kopsia, Blume.
Korthalsia, Blume.
Krameria, Linnæus.
Kreysigia, Reichenbach.
Kuhnia, Linnæus.
Kunzea, Reichenbach.
Kydia, Roxburgh.
Kyllinga, Rottboell.

Labichea, Gaudichaud.
Labisia, Lindley.
Lablab, Adanson.
Laburnum, Grisebach.
Lacæna, Lindley.
Lachenalia, Jacquin.
Lachnæa, Linnæus.
Lachnanthes, Elliott.
Lachnostoma, Humboldt, Bonpland, and Kunth.
Lactuca, Linnæus.
Lælia, Lindley.
Læliopsis, Lindley.
Lafoënsia, Vandelli.
Lagascea, Cavanilles.
Lagenaria, Seringe.
Lagenophora, Cassini.
Lagerströmia, Linnæus.
Lagetta, Jussieu.
Lagunaria, G. Don.
Lagurus, Linnæus.
Lallemantia, Fischer and Meyer.
Lamarckia, Mœnch.
Lambertia, Smith.
Lamium, Linnæus.
Lamourouxia, Humboldt, Bonpland, and Kunth.
Lanaria, Aiton.
Landolphia, Palisot de Beauvois.
Lankesteria, Lindley.
Lantana, Linnæus.
Lapageria, Ruiz and Pavon.
Lapeyrousia, Pourret.
Laplacea, Humboldt, Bonpland, and Kunth.
Laportea, Gaudichaud.
Lardizabala, Ruiz and Pavon.
Larix, Miller.
Larrea, Cavanilles.
Lasiopetalum, Smith.
Lasiospermum, Lagasca.
Lasthenia, Cassini.
Latania, Commerson.
Lathræa, Linnæus.
Lathyrus, Linnæus.
Latua, Philippi,
Laurelia, Jussieu.
Laurentia, Necker.
Laurus, Linnæus.
Lavandula, Linnæus.
Lavatera, Linnæus.
Lavradia, Vellozo.
Lawsonia, Linnæus.
Laxmannia, R. Brown.
Layia, Hooker and Arnott.
Leavenworthia, Torrey.
Lebeckia, Thunberg.
Lecythis, Linnæus.
Ledenbergia, Klotzsch.
Ledum, Linnæus.
Leea, Linnæus.
Leianthus, Grisebach.
Leiochilus, Knowles and Westcott.
Leiophyllum, Persoon.
Lemna, Linnæus.
Lens, Grenier and Godron.
Leonotis, Persoon.
Leontice, Linnæus.
Leontodon, Linnæus.
Leontopodium, R. Brown.
Lepanthes, Swartz.
Lepechinia, Willdenow.
Lepidagathis, Willdenow.
Lepidium, Linnæus.
Leptinella, Cassini.
Leptodermis, Wallich.
Leptomeria, R. Brown.
Leptospermum, Forster.
Leptosyne, De Candolle.
Leschenaultia, R. Brown.
Lespedeza, Michaux.
Lessertia, De Candolle.
Leucadendron, R. Brown.
Leuchtenbergia, Hooker.
Leucocarpus, Don.
Leucocoryne, Lindley.
Leucoium, Linnæus.
Leucopogon, R. Brown.
Leucospermum, R. Brown.
Leucothoë, Don.
Leuzea, De Candolle.
Levisticum, Koch.
Lewisia, Pursh.
Leycesteria, Wallich.
Leyssera, Linnæus.
Lhotzkya, Schauer.
Liabum, Adanson.
Liatris, Schreber.
Libertia, Sprengel.
Libocedrus, Endlicher.
Libonia, C. Koch.
Licuala, Thunberg.
Lietzia, Regel and Schmidt.
Lightfootia, L'Héritier.
Ligularia, Cassini.
Ligusticum, Linnæus.
Ligustrum, Linnæus.
Lilium, Linnæus.
Limnanthemum, S. P. Gmelin.
Limnanthes, R. Brown.
Limnocharis, Humboldt, Bonpland, and Kunth.
Limonia, Linnæus.
Limoniastrum, Mœnch.
Linaria, Jussieu.
Linconia, Linnæus.
Lindelofia, Lehmann.
Lindenia, Bentham.
Lindera, Thunberg.
Lindheimera, Asa Gray.
Lindleya, Humboldt, Bonpland, and Kunth.
Lindsaya, Dryander.
Linnæa, Gronovius.
Linum, Linnæus.
Liparia, Linnæus.
Liparis (plants), L. C. Richard.
Liparis (insects), Ochsenheimer.
Lippia, Linnæus.
Liquidambar, Linnæus.
Liriodendron, Linnæus.
Liriope, Loureiro.
Lisianthus, Aublet.
Lissanthe, R. Brown.
Lissochilus, R. Brown.
Litanthus, Harvey.
Litho-spermum, Linnæus.
Lit-ea, La Marck.
Littonia, Hooker.
Livistona, R. Brown.
Llavea, Luga-ca.

Genera and their Authors—*continued.*

Lloydia, Salisbury.
Loasa, Jussieu.
Lobelia, Linnæus.
Lobostemon, Lehmann.
Lockhartia, Hooker.
Loddigesia, Sims.
Lodoicea, Labillardière.
Lœselia, Linnæus.
Logania, R. Brown.
Loiseleuria, Desvaux.
Lolium, Linnæus.
Lomaria, Willdenow.
Lomatia, R. Brown.
Lomatophyllum, Willdenow.
Lonas, Adanson.
Lonchitis, Linnæus.
Lonchocarpus, Humboldt, Bonpland, and Kunth.
Lonicera, Linnæus.
Lopezia, Cavanilles.
Lophanthus, Bentham.
Lophiola, Ker.
Lophira, Banks.
Lophyrus, Latreille.
Loreya, De Candolle.
Loropetalum, Brown.
Lotus, Linnæus.
Loxococcus, H. Wendland and Drude.
Loxsoma, Brown.
Lucanus, Scopoli.
Luculia, Sweet.
Lucuma, Jussieu.
Ludia, La Marck.
Luffa. Cavanilles.
Luhea, Willdenow.
Luisia, Gaudichaud.
Lunaria, Linnæus.
Lupinus, Linnæus.
Luxemburgia, St. Hilaire.
Luzuriaga, Ruiz and Pavon.
Lycaste, Lindley.
Lychnis, Linnæus.
Lycium, Linnæus.
Lycoperdon, Tournefort.
Lycopersicum, Miller.
Lycopodium, Linnæus.
Lycoris, Herbert.
Lyda, Fabricius.
Lygeum, Linnæus.
Lygodium, Swartz.
Lyonia, Nuttall.
Lyonsia, R. Brown.
Lyperia, Bentham.
Lysimachia, Linnæus.
Lysinema, R. Brown.
Lysionotus, Don.
Lythrum, Linnæus.

Maba, Forster.
Macadamia, F. Muelle
Machærium, Persoon.
Mackaya, Harvey.
Macleania, Hooker.
Maclura, Nuttall.
Macodes, Blume.
Macradenia, R. Brown.
Macrocnemum, P. Browne.
Macroglossa, Ochsenheimer.
Macromeria, Don.
Macrostylis, Bartling and Wendland.
Macrozamia, Miquel.
Madia, Molina.
Mærua, Forskahl.
Mæsa, Forskahl.
Magnolia, Linnæus.
Mahernia, Linnæus.
Mahurea, Aublet.
Maianthemum, Wiggers.
Mairia, Nees.
Malabaila, Hoffmann.
Malachra, Linnæus.
Malacocarpus, Salm-Dyck.
Malaxis, Swartz.
Malcolmia, Brown.
Malope, Linnæus.
Malortiea, H. Wendland.
Malpighia, Linnæus.
Malva, Linnæus.
Malvastrum, Asa Gray.
Malvaviscus, Dillenius.
Mamestra, Treitschke.
Mammea, Linnæus.
Mammillaria, Haworth.
Mandevilla, Lindley.
Mandragora, Jussieu.
Manettia, Mutis.
Mangifera, Linnæus.
Manicaria, Gærtner.
Manihot, Adanson.
Mantisia, Sims.
Manulea, Linnæus.
Maranta, Linnæus.
Marasmius, Fries.
Marattia, Smith.
Margyricarpus, Ruiz and Pavon.
Marianthus, Hügel.
Marica, Ker.
Marila, Swartz.
Marlea, Roxburgh.
Marrubium, Linnæus.
Marsdenia, R. Brown.
Marshallia, Schreber.
Marsilea, Linnæus.
Martinezia, Ruiz and Pavon.
Martynia, Linnæus.
Mascarenhasia, Alphonse de Candolle.
Masdevallia, Ruiz and Pavon.
Massangea, Morren.
Massonia, Thunberg.
Mathiola, Brown.
Matonia, Brown.
Matricaria, Linnæus.
Maurandya, Ortega.
Mauria, Kunth.
Mauritia, Linnæus, jun.
Maxillaria, Ruiz and Pavon.
Maximiliana, Martius.
Maytenus, Feuillé.
Mazus, Loureiro.
Meconopsis, Viguier.
Medeola, Linnæus.
Medicago, Linnæus.
Medinilla, Gaudichaud.
Megacarpæa, De Candolle.
Megaclinium, Lindley.
Megarrhiza, Torrey and Gray.
Meiracylium, Reichenbach, jun.
Melaleuca, Linnæus.
Melampyrum. Linnæus.
Melanorrhœa, Wallich.
Melanthera, Rohr.
Melanthium, Linnæus.
Melasma, Bergius.
Melasphærula, Ker.
Melastoma, Linnæus.
Melhania, Forskahl.
Melia, Linnæus.
Melianthus, Linnæus.
Melichrus, R. Brown.
Melicocca, Linnæus.
Melicope, Forster.
Melilotus, Jussieu.
Melissa, Linnæus.
Melittis, Linnæus.
Melocactus, Link and Otto.
Melodinus, Forster.
Memecylon, Linnæus.
Meniscium, Schreber.
Menispermum, Linnæus.
Mentha, Linnæus.
Mentzelia, Linnæus.
Menyanthes, Linnæus.
Menziesia, Smith.
Mercurialis, Linnæus.
Merendera, Ramond.
Meriania, Swartz.
Mertensia, Roth.
Merulius, Haller.
Meryta, Forster.
Mesembryanthemum, Linnæus.
Mespilus, Linnæus.
Mesua, Linnæus.
Metrodorea, St. Hilaire.
Metrosideros, Banks.
Metroxylon, Rottboell.
Metternichia, Mikan.
Meum, Jacquin
Michauxia, L'Héritier.
Michelia, Linnæus.
Miconia, Ruiz and Pavon.
Microcachrys, J. D. Hooker.
Microgaster, Latreille.
Microglossa, De Candolle.
Microlicia, Don.
Microloma, R. Brown.
Micromeria, Bentham.
Micromyrtus, Bentham.
Microstylis, Nuttall.
Mikania, Willdenow.
Milla, Cavanilles.
Millettia, Wight and Arnott.
Millingtonia, Linnæus, jun.
Miltonia, Lindley.
Mimetes, Salisbury.
Mimosa, Linnæus.
Mimulus, Linnæus.
Mimusops, Linnæus.
Mirabilis, Linnæus.
Mirbelia, Smith.
Miscanthus, Anderson.
Mitchella, Linnæus.
Mitella, Linnæus.
Mitracarpum, Zuccarini.
Mitraria, Cavanilles.
Mitriostigma, Hochstetter.
Modecca, La Marck.
Modiola, Mœnch.
Mœhringia, Linnæus.
Mohria, Swartz.
Molinia, Schrank.
Molopospermum, Koch.
Moltkia, Lehmann.
Moluccella, Linnæus.
Momordica, Linnæus.
Monanthes, Haworth.
Monarda, Linnæus.
Monardella, Bentham.
Moneses, Salisbury.

Genera and their Authors—*continued.*

Monimia, Thouars.
Monnina, Ruiz and Pavon.
Monochætum, Naudin.
Monochilus, Fischer and Meyer.
Monochoria, Presl.
Monodora, Dunal.
Monogramme, Schrank.
Monolena, Triana.
Monolopia, De Candolle.
Monomeria, Lindley.
Monopanax, Regel.
Monotoca, R. Brown.
Monsonia, Linnæus.
Monstera, Adanson.
Montanoa, Llave and Lexarza.
Montezuma, De Candolle.
Montrichardia, Crüger.
Moquilea, Aublet.
Moræa, Linnæus.
Moricandia, De Candolle.
Morina, Linnæus.
Morinda, Linnæus.
Moringa, Jussieu.
Morisonia, Linnæus.
Mormodes, Lindley.
Moronobea, Aublet.
Morus, Linnæus.
Moscharia, Ruiz and Pavon.
Mucuna, Adanson.
Muehlenbeckia, Meissner.
Muellera, Linnæus.
Mukia, Arnott.
Mundtia, Kunth.
Muntingia, Linnæus.
Muraltia, Necker.
Murraya, Linnæus.
Musa, Linnæus.
Muscari, Miller.
Mussænda, Linnæus.
Musschia, Dumortier.
Mutisia, Linnæus, jun.
Myanthus, Lindley.
Myginda, Linnæus.
Mylocaryum, Willdenow.
Myoporum, Banks and Solander.
Myosotidium, Hooker.
Myosotis, Linnæus.
Myrcia, De Candolle.
Myrica, Linnæus.
Myricaria, Desvaux.
Myriophyllum, Linnæus.
Myristica, Linnæus.
Myrodia, Swartz.
Myrospermum, Jacquin.
Myroxylon, Linnæus, jun.
Myrrhis, Scopoli.
Myrsine, Linnæus.
Myrsiphyllum, Willdenow.
Myrtus, Linnæus.

Nægelia, Regel.
Nama, Linnæus.
Nandina, Thunberg.
Nannorhops, H. Wendland.
Nanodes, Lindley.
Napoleona, Palisot de Beauvois.
Naravelia, De Candolle.
Narcissus, Linnæus.
Nardostachys, De Candolle.
Narthecium, Mœhring.
Nasonia, Lindley.

Nasturtium, Brown.
Nauclea, Linnæus.
Nectandra, Rolander.
Nectaroscordum, Lindley.
Negundo, Mœnch.
Neillia, Don.
Neja, D. Don.
Nelitris, Gærtner.
Nelumbium, Jussieu.
Nemastylis, Nuttall.
Nematanthus, Martius.
Nematus, Leach.
Nemesia, Ventenat.
Nemopanthes, Rafinesque.
Nemophila, Nuttall.
Nenga, H. Wendland.
Nengella, Beccari.
Neottia, Linnæus.
Nepenthes, Linnæus.
Nepeta, Linnæus.
Nephelaphyllum, Blume.
Nephelium, Linnæus.
Nephrodium, L. C. Richard.
Nephrolepis, Schott.
Nephrosperma, Balfour, jun.
Nephthytis, Schott.
Neptunia, Loureiro.
Nerine, Herbert.
Nerium, Linnæus.
Nertera, Banks and Solander.
Nesæa, Commerson.
Neurolæna, R. Brown.
Newbouldia, Seemann.
Nicandra, Adanson.
Nicotiana, Linnæus.
Nierembergia, Ruiz and Pavon.
Nigella, Linnæus.
Nipa, Wurmb.
Niphæa, Lindley.
Nissolia, Jacquin.
Nivenia, R. Brown.
Noctua, Guénée.
Noisettia, Humboldt, Bonpland, and Kunth.
Nolana, Linnæus.
Nolina, Michaux.
Nonnea, Mœnch.
Nopalea, Salm-Dyck.
Norantea, Aublet.
Notelæa, Ventenat.
Nothochlæna, R. Brown.
Nothoscordum, Kunth.
Notospartium, J. D. Hooker.
Notylia, Lindley.
Nuphar, Smith.
Nuttallia, Torrey and Gray.
Nuytsia, R. Brown.
Nyctanthes, Linnæus.
Nyctocalos, Teijsmann.
Nymphæa, Linnæus.
Nyssa, Linnæus.

Oberonia, Lindley.
Ochna, Schreber.
Ochrocarpus, Thouars.
Ochroma, Swartz.
Ochropteris, J. Smith.
Ochrosia, Jussieu.
Ocimum, Linnæus.
Ocotea, Aublet.
Octadesmia, Bentham.
Octomeria, R. Brown.
Odontadenia, Bentham.
Odontoglossum, Humboldt, Bonpland, and Kunth.
Odontospermum, Necker.
Œdera, Linnæus.
Œnocarpus, Martius.
Œnothera, Linnæus.
Oftia, Adanson.
Ohlendorffia, Lehmann.
Oidium, Link.
Olax, Linnæus.
Oldenlandia, Linnæus.
Oldfieldia, Hooker.
Olea, Linnæus.
Oleandra, Cavanilles.
Olearia, Mœnch.
Omphalea, Linnæus.
Omphalodes, Mœnch.
Oncidium, Swartz.
Oncosperma, Blume.
Onobrychis, Gærtner.
Onoclea, Linnæus.
Ononis, Linnæus.
Onopordon, Linnæus.
Onoseris, De Candolle.
Onosma, Linnæus.
Onosmodium, Michaux.
Onychium, Kaulfuss.
Opercularia, Gærtner.
Ophiocaulon, J. D. Hooker.
Ophioglossum, Linnæus.
Ophiopogon, Ker.
Ophrys, Linnæus.
Oplismenus, Palisot de Beauvois.
Opuntia, Miller.
Orania, Zippelius.
Orchestes, Illiger.
Orchis, Linnæus.
Oreodoxa, Willdenow.
Oreopanax, Decaisne and Planchon.
Orgyia, Ochsenheimer.
Origanum, Linnæus.
Ormocarpum, Palisot de Beauvois.
Ormosia, Jackson.
Ornithidium, Salisbury.
Ornithocephalus, Hooker.
Ornithochilus, Wallich.
Ornithogalum, Linnæus.
Ornithoglossum, Salisbury.
Ornithopus, Linnæus.
Orobanche, Linnæus.
Orobus, Linnæus.
Orontium, Linnæus.
Oroxylum, Ventenat.
Orphium, Ernst Meyer.
Orthoceras, R. Brown.
Ortho-siphon, Bentham.
Orthrosanthus, Sweet.
Orvala, Linnæus.
Oryza, Linnæus.
Osbeckia, Linnæus.
Osmanthus, Loureiro.
Osmunda, Linnæus.
Ossæa, De Candolle.
Osteospermum, Linnæus.
Ostrya, Scopoli.
Osyris, Linnæus.
Otacanthus, Lindley.
Othera, Thunberg.
Othonna, Linnæus.

Genera and their Authors—*continued.*

Othonnopsis, Jaubert and Spach.
Otiorhynchus, Germar.
Otochilus, Lindley.
Ottelia, Persoon.
Ourisia, Commerson.
Ouvirandra, Thouars.
Oxalis, Linnæus.
Oxyanthus, De Candolle.
Oxybaphus, Vahl.
Oxycoccus, Persoon.
Oxydendron, De Candolle.
Oxylobium, Andrews.
Oxypetalum, R. Brown.
Oxyspora, De Candolle.
Oxystelma, R. Brown.
Oxytropis, De Candolle.
Ozothamnus, Lessing.

Pachira, Aublet.
Pachynema, Brown.
Pachyphyllum, Humboldt, Bonpland, and Kunth.
Pachypodium, Lindley.
Pachyrhizus, L. C. Richard.
Pachysandra, Michaux.
Pachystima, Rafinesque.
Pachystoma, Blume.
Pæderia, Linnæus.
Pæderota, Linnæus.
Pæonia, Linnæus.
Palafoxia, Lagasca.
Palava, Cavanilles.
Paliavana, Vandelli.
Palicourea, Aublet.
Palisota, Reichenbach.
Paliurus, Jussieu.
Pallenis, Cassini.
Palmia, Endlicher.
Palumbina, Reichenbach, jun.
Panax, Linnæus.
Pancratium, Linnæus.
Pandanus, Linnæus, jun.
Panicum, Linnæus.
Papaver, Linnæus.
Papyrus, Willdenow.
Paracaryum, Boissier.
Paradisanthus, Reichenbach, jun.
Paradisia, Mazzucato.
Pardanthus, Ker.
Parinarium, Jussieu.
Paris, Linnæus.
Parkia, R. Brown.
Parkinsonia, Linnæus.
Parmentiera, De Candolle.
Parnassia, Linnæus.
Parochetus, Hamilton.
Paronychia, Jussieu.
Parrotia, C. A. Meyer.
Parrya, Brown.
Parsonsia, R. Brown.
Parthenium, Linnæus.
Pascalia, Ortega.
Paspalum, Linnæus.
Passiflora, Linnæus.
Patagonula, Linnæus.
Patersonia, R. Brown.
Patrinia, Jussieu.
Paullinia, Linnæus.
Paulownia, Siebold and Zuccarini.
Pavetta, Linnæus.
Pavia, Poiret.
Pavonia, Cavanilles.
Pectis, Linnæus.
Pedalium, Linnæus.
Pedicularis, Linnæus.
Pedilanthus, Necker.
Peganum, Linnæus.
Pelargonium, L'Héritier.
Pelecyphora, Ehrenberg.
Pelexia, Lindley.
Peliosanthes, Andrews.
Pellæa, Link and Hooker.
Pellionia, Gaudichaud.
Peltandra, Rafinesque.
Peltaria, Linnæus.
Peltophorum, Vogel.
Peltostigma, Walpers.
Pemphigus, Hartig.
Penæa, Linnæus.
Pennisetum, Persoon.
Pentachæta, Nuttall.
Pentadesma, Sabine.
Pentagonia, Bentham.
Pentapera, Klotzsch.
Pentapetes, Linnæus.
Pentapterygium, Klotzsch.
Pentarhaphia, Lindley.
Pentas, Bentham.
Pentstemon, Mitchell.
Pentzia, Thunberg.
Peperomia, Ruiz and Pavon.
Peplis, Linnæus.
Pereskia, Miller.
Perezia, Lagasca.
Pergularia, Linnæus.
Peridermium, Link.
Perilomia, Humboldt, Bonpland, and Kunth.
Periploca, Linnæus.
Peristeria, Hooker.
Peristrophe, Nees.
Peritoma, De Candolle.
Pernettya, Gaudichaud.
Peronospora, Corda.
Persea, Gærtner, jun.
Persica, Tournefort.
Persoonia, Smith.
Petalacte, Don.
Petalidium, Nees.
Petalostemon, Michaux.
Petasites, Gærtner.
Petiveria, Linnæus.
Petræa, Linnæus.
Petrobium, R. Brown.
Petrophila, R. Brown.
Petteria, Presl.
Petunga, De Candolle.
Petunia, Jussieu.
Peucedanum, Linnæus.
Peumus, Persoon.
Peziza, Dillenius.
Pfaffia, Martius.
Phaca, Linnæus.
Phacelia, Jussieu.
Phaedon, Megerle.
Phædranassa, Herbert.
Phænocoma, Don.
Phænosperma, Munro.
Phaius, Loureiro.
Phalænopsis, Blume.
Phalaris, Linnæus.
Phaleria, Jack.
Pharnaceum, Linnæus.
Pharus, Linnæus.
Phaseolus, Linnæus.
Phebalium, Ventenat.
Phelipæa, Desfontaines.
Philadelphus, Linnæus.
Philageria, Masters.
Philesia, Commerson.
Philibertia, Humboldt, Bonpland, and Kunth.
Phillyrea, Linnæus.
Philodendron, Schott.
Philotheca, Rudge.
Philydrum, Banks.
Phinæa, Bentham.
Phleum, Linnæus.
Phlogacanthus, Nees.
Phlomis, Linnæus.
Phlox, Linnæus.
Phœnix, Linnæus.
Pholidocarpus, Blume.
Pholidota, Lindley.
Phormium, Forster.
Phorodon, Passerini.
Photinia, Lindley.
Phragmidium, Link.
Phratora, Chevrolat.
Phryma, Linnæus.
Phrynium, Willdenow.
Phuopsis, Grisebach.
Phygelius, E. Meyer.
Phylica, Linnæus.
Phyllagathis, Blume.
Phyllanthus, Linnæus.
Phyllarthron, De Candolle.
Phyllis, Linnæus.
Phyllobius, Schönherr.
Phyllocactus, Link.
Phyllocalyx, Bergius.
Phyllocladus, L. C. Richard.
Phyllodoce, Salisbury.
Phyllostachys, Siebold and Zuccarini.
Phyllota, De Candolle.
Phyllotreta, Chevrolat.
Physalis, Linnæus.
Physianthus, Martius.
Physidium, Schrader.
Physochlaina, G. Don.
Physosiphon, Lindley.
Physospermum, Cusson.
Physostegia, Bentham.
Physostelma, Wight.
Physostigma, Balfour.
Physurus, L. C. Richard.
Phytelephas, Ruiz and Pavon.
Phyteuma, Linnæus.
Phytocrene, Wallich.
Phytolacca, Linnæus.
Phytomyza, Fallèn.
Phytophthora, De Bary.
Piaranthus, R. Brown.
Picea, Link.
Picrorhiza, Royle.
Pictetia, De Candolle.
Pieris, Don.
Pigafetta, Beccari.
Pilea, Lindley.
Pileanthus, Labillardière.
Pilocarpus, Vahl.
Pilocereus, Lemaire.
Pilularia, Linnæus.
Pimelea, Banks.

Genera and their Authors—*continued.*

Pimenta, Lindley.
Pimpinella, Linnæus.
Pinanga, Blume.
Pinckneya, L. C. Richard.
Pinellia, Tenore.
Pinguicula, Linnæus.
Pinus, Linnæus.
Pionea, Guénée.
Piophila, Fallèn.
Piper, Linnæus.
Piptadenia, Bentham.
Piptanthus, D. Don.
Piptospatha, N. E. Brown.
Piqueria, Cavanilles.
Piscidia, Linnæus.
Pisonia, Linnæus.
Pissodes, Germar.
Pistacia, Linnæus.
Pistia, Linnæus.
Pisum, Linnæus.
Pitcairnia, L'Héritier.
Pithecoctenium, Martius.
Pithecolobium, Martius.
Pittosporum, Banks.
Placea, Miers.
Plagianthus, Forster.
Plagiolirion, Baker.
Planera, Gmelin.
Plantago, Linnæus.
Plasmodiophora, Woronin.
Platanus, Linnæus.
Platycarpha, Lessing.
Platycarpum, Humboldt and Bonpland.
Platycarya, Siebold and Zuccarini.
Platycerium, Desvaux.
Platyclinis, Bentham.
Platycodon, Alphonse de Candolle.
Platycrater, Siebold and Zuccarini.
Platylepis, A. Richard.
Platylobium, Smith.
Platylophus, Don.
Platypetalum, Brown.
Platystemon, Bentham.
Platystigma, Bentham.
Platytheca, Steetz.
Platyzoma, Brown.
Plectocomia, Martius and Blume.
Plectranthus, L'Héritier.
Plectritis, De Candolle.
Plectronia, Linnæus.
Pleea, Michaux.
Pleospora, Rabenhorst.
Pleroma, Don.
Pleurogyne, Eschscholtz.
Pleuropetalum, J. D. Hooker.
Pleurospermum, Hoffmann.
Pleurothallis, R. Brown.
Plocama, Aiton.
Plocoglottis, Blume.
Pluchea, Cassini.
Plumbago, Linnæus.
Plumeria, Linnæus.
Plusia, Freitschke.
Plutella, Schranck.
Poa, Linnæus.
Podalyria, La Marck.
Podanthes, Haworth.
Podanthus, Lagasca.
Podocarpus, L'Héritier.
Podolasia, N. E. Brown.
Podolepis, Labillardière.
Podophyllum, Linnæus.
Podopterus, Humboldt and Bonpland.
Podostigma, Elliott.
Podotheca, Cassini.
Pogogyne, Bentham.
Pogonia, Jussieu.
Pogonopus, Klotzsch.
Pogostemon, Desfontaines.
Poinciana, Linnæus.
Poiretia, Ventenat.
Poitæa, Ventenat.
Poivrea, Commerson.
Polanisia, Rafinesque.
Polemonium, Linnæus.
Polianthes, Linnæus.
Polyalthia, Blume.
Polycalymma, F. Mueller.
Polycarpæa, La Marck.
Polycycnis, Reichenbach, jun.
Polygala, Linnæus.
Polygonatum, Adanson.
Polygonum, Linnæus.
Polymnia, Linnæus.
Polypodium, Linnæus.
Polyporus, Michaux.
Polystachya, Hooker.
Polyxena, Kunth.
Pomaderris, Labillardière.
Pomaria, Cavanilles.
Pomax, Solander.
Ponera, Lindley.
Pongamia, Ventenat.
Pontederia, Linnæus.
Ponthieva, R. Brown.
Populus, Linnæus.
Porana, Burmann.
Poranthera, Rudge.
Porlieria, Ruiz and Pavon.
Portea, C. Koch.
Portlandia, P. Browne.
Portulaca, Linnæus.
Portulacaria, Jacquin.
Posoqueria, Aublet.
Potamogeton, Linnæus.
Potentilla, Linnæus.
Poterium, Linnæus.
Pothos, Linnæus.
Pourouma, Aublet.
Prasophyllum, R. Brown.
Pratia, Gaudichaud.
Premna, Linnæus.
Prenanthes, Linnæus.
Prepusa, Martius.
Prescottia, Lindley.
Preslia, Opitz.
Prestoea, J. D. Hooker.
Prestonia, R. Brown.
Priestleya, De Candolle.
Primula, Linnæus.
Prionium, E. Meyer.
Prismatocarpus, L'Héritier.
Pritchardia, Seemann and H. Wendland.
Priva, Adanson.
Prockia, Linnæus.
Proclesia, Klotzsch.
Pronaya, Hügel.
Proserpinaca, Linnæus.
Prosopis, Linnæus.
Prostanthera, Labillardière.
Protea, Linnæus.
Proustia, Lagasca.
Prunella, Linnæus.
Prunus, Linnæus.
Psamma, Palisot de Beauvois.
Psammisia, Klotzsch.
Pseudodracontium, N. E. Brown.
Pseudolarix, Gordon.
Pseudopanax, C. Koch.
Pseudotsuga, Carrière.
Psidium, Linnæus.
Psilotum, Swartz.
Psoralea, Linnæus.
Psychotria, Linnæus.
Psylla, Geoffroy.
Ptelea, Linnæus.
Ptelidium, Thouars.
Pteris, Linnæus.
Pterocarpus, Linnæus.
Pterocarya, Kunth.
Pterodiscus, Hooker.
Pterolobium, R. Brown.
Pteroneurum, De Candolle.
Pterospermum, Schreber.
Pterostylis, R. Brown.
Pterygodium, Swartz.
Ptilomeris, Nuttall.
Ptychosperma, Labillardière.
Puccinia, Persoon.
Pueraria, De Candolle.
Pulmonaria, Linnæus.
Pultenæa, Smith.
Punica, Linnæus.
Pupalia, Jussieu.
Purshia, De Candolle.
Puschkinia, Adams.
Putoria, Persoon.
Putterlickia, Endlicher.
Puya, Molina.
Pycnostachys, Hooker.
Pyralis, Linnæus.
Pyrethrum, Gærtner.
Pyrola, Linnæus.
Pyrularia, Michaux.
Pyrus, Linnæus.
Pythium, Nees.
Pyxidanthera, Michaux.

Qualea, Aublet.
Quaqua, N. E. Brown.
Quassia, Linnæus.
Quekettia, Lindley.
Quercus, Linnæus.
Quesnelia, Gaudichaud.
Quillaja, Molina.
Quisqualis, Linnæus.
Quivisia, Commerson.

Rafnia, Thunberg.
Raillardia, Gaudichaud.
Ramondia, L. C. Richard.
Ramularia, Unger.
Randia, Linnæus.
Ranunculus, Linnæus.
Raphanus, Linnæus.
Raphia, Palisot de Beauvois.
Raphistemma, Wallich.
Raspalia, Brongniart.
Ratonia, De Candolle.
Rauwolfia, Linnæus.
Ravenala, Adanson.
Ravenea, Bouché.

Genera and their Authors—*continued.*

Ravenia, Vellozo.
Reaumuria, Linnæus.
Reevesia, Lindley.
Regelia, Schauer.
Rehmannia, Liboschitz.
Reineckea, Kunth.
Reinwardtia, Dumortier.
Relhania, L'Héritier.
Remusatia, Schott.
Renanthera, Loureiro.
Renealmia, Linnæus, jun.
Reseda, Linnæus.
Restio, Linnæus.
Restrepia, Humboldt, Bonpland, and Kunth.
Retanilla, Brongniart.
Retinia, Guénée.
Retiniphyllum, Humboldt and Bonpland.
Retzia, Thunberg.
Rhagodia, R. Brown.
Rhamnus, Linnæus.
Rhaphidophora, Schott.
Rhaphiolepis, Lindley.
Rhaphithamnus, Miers.
Rhapidophyllum, H. Wendland and Drude.
Rhapis, Linnæus, jun.
Rhaponticum, La Marck.
Rheedia, Linnæus.
Rheum, Linnæus.
Rhexia, Linnæus.
Rhinacanthus, Nees.
Rhinanthus, Linnæus.
Rhipogonum, Forster.
Rhipsalis, Gærtner.
Rhizophora, Linnæus.
Rhodamnia, Jack.
Rhodites, Hartig.
Rhodochiton, Zuccarini.
Rhododendron, Linnæus.
Rhodoleia, Hooker.
Rhodomyrtus, De Candolle.
Rhodora, Linnæus.
Rhodospatha, Pœppig and Endlicher.
Rhodostachys, Philippi.
Rhodothamnus, Reichenbach.
Rhodotypos, Siebold and Zuccarini.
Rhoeo, Hance.
Rhopalostylis, H. Wendland and Drude.
Rhus, Linnæus.
Rhynchanthera, De Candolle.
Rhynchitis, Herbst.
Rhynchoglossum, Blume.
Rhynchosia, Loureiro.
Rhynchostylis, Blume.
Rhynchotechum, Blume.
Rhytidophyllum, Martius.
Rhytisma, Fries.
Ribes, Linnæus.
Richardia, Kunth,
Richardsonia, Kunth.
Richea, R. Brown.
Ricinus, Linnæus.
Ricotia, Linnæus.
Rigidella, Lindley.
Riocreuxia, Decaisne.
Ritchiea, Brown.
Rivea, Choisy.
Rivina, Linnæus.
Robinia, Linnæus.
Rochea, De Candolle.
Rodgersia, Asa Gray.
Rodriguezia, Ruiz and Pavon.
Roella, Linnæus.
Rœmeria, De Candolle.
Roezlia, Regel.
Rohdea, Roth.
Rolandra, Rottboell.
Romanzoffia, Chamisso.
Romneya, Harvey.
Romulea, Maratti.
Rondeletia, Linnæus.
Ronnbergia, Morren.
Rosa, Linnæus.
Roscheria, H. Wendland.
Roscoea, Smith.
Rosmarinus, Linnæus.
Rottboellia, Linnæus, jun.
Roupala, Aublet.
Roupellia, Wallich.
Rourea, Aublet.
Royena, Linnæus.
Roylea, Wallich.
Rubia, Linnæus.
Rubus, Linnæus.
Rudbeckia, Linnæus.
Rudgea, Salisbury.
Rudolphia, Willdenow.
Ruellia, Linnæus.
Ruizia, Cavanilles.
Rulingia, R. Brown.
Rumex, Linnæus.
Ruppia, Linnæus.
Ruscus, Linnæus.
Russelia, Jacquin.
Ruta, Linnæus.
Ruyschia, Jacquin.
Ryania, Vahl.
Ryssopterys, Blume.

Sabal, Adanson.
Sabbatia, Adanson.
Sabicea, Aublet.
Sabinea, De Candolle.
Saccharum, Linnæus.
Saccolabium, Blume.
Sadleria, Kaulfuss.
Sageretia, Brongniart.
Sagina, Linnæus.
Sagittaria, Linnæus.
Sagræa, De Candolle.
Salacia, Linnæus.
Salicornia, Linnæus.
Salix, Linnæus.
Salmea, De Candolle.
Salpichroa, Miers.
Salpiglossis, Ruiz and Pavon.
Salsola, Linnæus.
Salvadora, Linnæus.
Salvia, Linnæus.
Salvinia, Michaux.
Sambucus, Linnæus.
Samolus, Linnæus.
Samyda, Linnæus.
Sanchezia, Ruiz and Pavon.
Sandersonia, Hooker.
Sandoricum, Cavanilles.
Sanguinaria, Linnæus.
Sanseveria, Thunberg.
Santalum, Linnæus.
Santolina, Linnæus.
Sanvitalia, La Marck.
Saperda, Fabricius.
Sapindus, Linnæus.
Sapium, P. Browne.
Saponaria, Linnæus.
Sapota, Gærtner.
Saraca, Linnæus.
Saracha, Ruiz and Pavon.
Sarcanthus, Lindley.
Sarcocapnos, De Candolle.
Sarcocaulon, De Candolle.
Sarcocephalus, Afzelius.
Sarcochilus, R. Brown.
Sarcococca, Lindley.
Sarcocolla, Kunth.
Sarcolobus, R. Brown.
Sarcostemma, R. Brown.
Sarmienta, Ruiz and Pavon.
Sarracenia, Linnæus.
Sassafras, Nees.
Satureia, Linnæus.
Satyrium, Swartz.
Saundersia, Reichenbach, jun.
Saurauja, Willdenow.
Sauromatum, Schott.
Sauropus, Blume.
Saururus, Linnæus.
Saussurea, De Candolle.
Sauvagesia, Linnæus.
Saxegothea, Lindley.
Saxifraga, Linnæus.
Saxofridericia, Robert Schomburgk.
Scabiosa, Linnæus.
Scævola, Linnæus.
Scaphyglottis, Pœppig and Endlicher.
Scelochilus, Klotzsch.
Schæfferia, Jacquin.
Schaueria, Nees.
Scheelea, Karsten.
Schelhammera, R. Brown.
Scheuchzeria, Linnæus.
Schima, Reinwardt.
Schinus, Linnæus.
Schismatoglottis, Zollikofer and Morren.
Schismus, Palisot de Beauvois.
Schizæa, Smith.
Schizandra, Michaux.
Schizanthus, Ruiz and Pavon.
Schizobasis, Baker.
Schizodium, Lindley.
Schizolobium, Vogel.
Schizomeria, Don.
Schizopetalon, Sims.
Schizophragma, Siebold and Zuccarini.
Schizostylis, Backhouse and Harvey.
Schkuhria, Roth.
Schlimmia, Planchon.
Schlumbergeria, Morren.
Schmidelia, Linnæus.
Schœnia, Steetz.
Schœnorchis, Blume.
Schœnus, Linnæus.
Schœpfia, Schreber.
Schomburgkia, Lindley.
Schotia, Jacquin.
Schouwia, De Candolle.
Schradera, Vahl.
Schranckia, Willdenow

Genera and their Authors—*continued.*

Schwannia, Endlicher.
Schweiggeria, Sprengel.
Schwenkia, Linnæus.
Sciadophyllum, P. Browne.
Sciadopitys, Siebold and Zuccarini.
Scilla, Linnæus.
Scindapsus, Schott.
Scirpus, Linnæus.
Scleranthus, Linnæus.
Scleria, Bergius.
Sclerothamnus, R. Brown.
Scolopendrium, Smith.
Scolymus, Linnæus.
Scoparia, Linnæus.
Scopolia, Jacquin.
Scorpiurus, Linnæus.
Scorzonera, Linnæus.
Scottea, R. Brown.
Scrophularia, Linnæus.
Scutellaria, Linnæus.
Scuticaria, Lindley.
Sebæa, R. Brown.
Secale, Linnæus.
Secamone, R. Brown.
Sechium, P. Browne.
Securidaca, Linnæus.
Securigera, De Candolle.
Securinega, Jussieu.
Sedum, Linnæus.
Seemannia, Regel.
Selaginella, Sprengel.
Selago, Linnæus.
Selenia, Nuttall.
Selenipedium, Reichenbach, jun.
Selinum, Linnæus.
Semecarpus, Linnæus, jun.
Semeiandra, Hooker and Arnott.
Semele, Kunth.
Sempervivum, Linnæus.
Senecio, Linnæus.
Sequoia, Endlicher.
Seraphyta, Fischer and Meyer.
Serapias, Linnæus.
Serenoa, J. D. Hooker.
Sericocarpus, Nees.
Seringia, J. Gay.
Serissa, Commerson.
Serjania, Plumier.
Serpicula, Linnæus.
Serratula, Linnæus.
Serruria, Salisbury.
Sertifera, Lindley.
Sesamum, Linnæus.
Sesbania, Persoon.
Seseli, Linnæus.
Sesia, Fabricius.
Sesleria, Scopoli.
Sesuvium, Linnæus.
Setaria, Palisot de Beauvois.
Severinia, Tenore.
Sewerzowia, Regel and Schmalhausen.
Seymeria, Pursh.
Shepherdia, Nuttall.
Sibthorpia, Linnæus.
Sicyos, Linnæus.
Sida, Linnæus.
Sidalcea, Asa Gray.
Sideritis, Linnæus.
Sideroxylon, Linnæus.
Siebera, Reichenbach.
Siegesbeckia, Linnæus.
Sigmatostalyx, Reichenbach, jun.
Silaus, Besser.
Silene, Linnæus.
Silpha, Linnæus.
Silphium, Linnæus.
Silybum, Gærtner.
Simaba, Aublet.
Simarouba, Aublet.
Simethis, Kunth.
Simmondsia, Nuttall.
Sinapis, Linnæus.
Sinningia, Nees.
Siphocampylos, Pohl.
Siphonophora, Koch.
Sirex, Linnæus.
Sisymbrium, Linnæus.
Sisyrinchium, Linnæus.
Sitona, Germar.
Sium, Linnæus.
Skimmia, Thunberg.
Sloanea, Linnæus.
Smeathmannia, Solander.
Smilacina, Desfontaines.
Smilax, Linnæus.
Smithia, Aiton.
Smyrnium, Linnæus.
Sobralia, Ruiz and Pavon.
Socratea, Karsten.
Solandra, Swartz.
Solanum, Linnæus.
Solaria, Philippi.
Soldanella, Linnæus.
Solenanthus, Ledebour.
Solenidium, Lindley.
Solenomelus, Miers.
Solenophora, Bentham.
Solidago, Linnæus.
Sollya, Lindley.
Sonchus, Linnæus.
Sonerila, Roxburgh.
Sonneratia, Linnæus, jun.
Sophora, Linnæus.
Sophronitis, Lindley.
Sopubia, Hamilton.
Sorghum, Persoon.
Sorindeia, Thouars.
Sorocephalus, R. Brown.
Sowerbæa, Smith.
Sparaxis, Ker.
Sparganium, Linnæus.
Sparmannia, Linnæus, jun.
Spartina, Schreber.
Spartium, Linnæus.
Spartothamnus, Allan Cunningham.
Spatalla, Salisbury.
Spathantheum, Schott.
Spathegaster, Hartig.
Spathelia, Linnæus.
Spathicarpa, Hooker.
Spathiphyllum, Schott.
Spathodea, Palisot de Beauvois.
Spathoglottis, Blume.
Specularia, Heister.
Speirantha, Baker.
Spermacoce, Linnæus.
Sphacele, Bentham.
Sphæralcea, St. Hilaire.
Sphærolobium, Smith.
Sphærophysa, De Candolle.
Sphæropteris, Wallich.
Sphagnum, Dillenius.
Sphenandra, Bentham.
Sphenodesma, Jack.
Spigelia, Linnæus.
Spilanthes, Linnæus.
Spiloscma, Stephens.
Spinacia, Linnæus.
Spiræa, Linnæus.
Spiranthera, St. Hilaire.
Spiranthes, L. C. Richard.
Spironema, Lindley.
Spondias, Linnæus.
Sporobolus, R. Brown.
Spraguea, Torrey.
Sprekelia, Heister.
Sprengelia, Smith.
Spyridium, Fenzl.
Staavia, Thunberg.
Stachys, Linnæus.
Stachytarpheta, Vahl.
Stachyurus, Siebold and Zuccarini.
Stackhousia, Smith.
Stæhelina, Linnæus.
Stangeria, T. Moore.
Stanhopea, Frost.
Stanleya, Nuttall.
Stapelia, Linnæus.
Staphylea, Linnæus.
Statice, Linnæus.
Stauntonia, De Candolle.
Stauranthera, Bentham.
Stauropsis, Reichenbach, jun.
Staurostigma, Scheidweiler.
Stelis, Swartz.
Stellaria, Linnæus.
Stellera, Linnæus.
Stemodia, Linnæus.
Stemona, Loureiro.
Stenanthera, R. Brown.
Stenanthium, Asa Gray.
Stenia, Lindley.
Stenocarpus, R. Brown.
Stenochilus, R. Brown.
Stenocoryne, Lindley.
Stenoglossum, Humboldt, Bonpland, and Kunth.
Stenoglottis, Lindley.
Stenomesson, Herbert.
Stenoptera, Presl.
Stenospermation, Schott.
Stenostomum, Gærtner.
Stenotaphrum, Trinius.
Stephanandra, Siebold and Zuccarini.
Stephania, Loureiro.
Stephanocoma, Lessing.
Stephanomeria, Nuttall.
Stephanotis, Thouars.
Sterculia, Linnæus.
Stereosandra, Blume.
Sterigma, De Candolle.
Steriphoma, Sprengel.
Sternbergia, Waldstein and Kitaibel.
Steudnera, C. Koch.
Stevensonia, Duncan.
Stevia, Cavanilles.
Stifftia, Mikan.
Stigmaphyllon, A. Jussieu.
Stillingia, Linnæus.
Stipa, Linnæus.
Stokesia, L'Héritier.
Stranvæsia, Lindley.
Stratiotes, Linnæus.

Genera and their Authors—*continued.*

Stravadium, Miquel.
Streblorhiza, Endlicher.
Streblus, Loureiro.
Strelitzia, Aiton.
Streptanthera, Sweet.
Streptanthus, Nuttall.
Streptocarpus, Lindley.
Streptopus, Michaux.
Streptosolen, Miers.
Strobilanthes, Blume.
Strobilorachis, Link, Klotzsch, and Otto.
Stromanthe, Sonder.
Strophanthus, De Candolle.
Stropholirion, Torrey.
Strumaria, Jacquin.
Struthiola, Linnæus.
Strychnos, Linnæus.
Stuartia, Linnæus.
Stylidium, Swartz.
Stylophorum, Nuttall.
Stylosanthes, Swartz.
Stypandra, R. Brown.
Styphelia, Smith.
Styrax, Linnæus.
Suæda, Forskahl.
Subularia, Linnæus.
Succovia, Medikus.
Sunipia, Lindley.
Sutherlandia, R. Brown.
Sutrina, Lindley.
Suttonia, Achille Richard.
Swainsona, Salisbury.
Swartzia, Schreber.
Swertia, Linnæus.
Swietenia, Linnæus.
Syagrus, Martius.
Sycomorus, Gasparrini.
Symphoricarpus, Jussieu.
Symphyandra, Alphonse de Candolle.
Symphyostemon, Miers.
Symphytum, Linnæus.
Sympieza, Lichtenstein.
Symplocarpus, Salisbury.
Symplocos, Linnæus.
Synadenium, Boissier.
Synandra, Nuttall.
Synechanthus, H. Wendland.
Syngonium, Schott.
Synnotia, Sweet.
Syringa, Linnæus.
Syringodea, J. D. Hooker.
Syrphus, Stephens.
Szowitzia, Fischer and Meyer.

Tabebuia, Gomez.
Tabernæmontana, Linnæus.
Tacca, Forster.
Taccarum, Brongniart.
Tachiadenus, Grisebach.
Tachigalia, Aublet.
Tacsonia, Jussieu.
Tæniophyllum, Blume.
Tænitis, Swartz.
Tagetes, Linnæus.
Tainia, Blume.
Talauma, Jussieu.
Taligalea, Aublet.
Talinum, Adanson.
Talisia, Aublet.
Tamarindus, Linnæus.
Tamarix, Linnæus.
Tamonea, Aublet.
Tamus, Linnæus.
Tanacetum, Linnæus.
Tanghinia, Thouars.
Taraxacum, Haller.
Tarchonanthus, Linnæus.
Tauscheria, Fischer.
Taverniera, De Candolle.
Taxodium, L. C. Richard.
Taxus, Linnæus.
Tecoma, Jussieu.
Tecophilæa, Bertero.
Tectona, Linnæus, jun.
Teedia, Rudolphi.
Teesdalia, Brown.
Telephium, Linnæus.
Telfairia, Hooker.
Telipogon, Humboldt, Bonpland, and Kunth.
Tellima, Brown.
Telopea, R. Brown.
Templetonia, R. Brown.
Tenaris, Ernst Meyer.
Tephrosia, Persoon.
Teramnus, Swartz.
Terminalia, Linnæus.
Ternstrœmia, Linnæus, jun.
Tessaria, Ruiz and Pavon.
Testacella, Cuvier.
Testudinaria, Salisbury.
Tetracera, Linnæus.
Tetradium, Loureiro.
Tetragonia, Linnæus.
Tetragonotheca, Linnæus.
Tetramicra, Lindley.
Tetranema, Bentham.
Tetranthus, Swartz.
Tetranychus, Dufour.
Tetrapogon, Desfontaines.
Tetrapterys, Cavanilles.
Tetratheca, Smith.
Tetrazygia, L. C. Richard.
Teucrium, Linnæus.
Teysmannia, Reichenbach, jun.
Thalia, Linnæus.
Thalictrum, Linnæus.
Thamnea, Solander.
Thamnochortus, Bergius.
Thapsia, Linnæus.
Thecostele, Reichenbach, jun.
Thelebolus, Tode.
Thelephora, Ehrhardt.
Thelesperma, Lessing.
Thelygonum, Linnæus.
Thelymitra, Forster.
Themistoclesia, Klotzsch.
Thenardia, Humboldt, Bonpland, and Kunth.
Theobroma, Linnæus.
Theophrasta, Jussieu.
Thera, Stephens.
Thermopsis, R. Brown.
Theropogon, Maximowicz.
Thesium, Linnæus.
Thespesia, Correa da Serra.
Thevetia, Linnæus.
Thibaudia, Pavon.
Thladiantha, Bunge.
Thlaspi, Linnæus.
Thomasia, J. Gay.
Thomsonia, Wallich.
Thouinia, Poiteau.
Thrinax, Linnæus, jun.
Thrips, Linnæus.
Thryallis, Martius.
Thryptomene, Endlicher.
Thunbergia, Linnæus, jun.
Thuya, Linnæus.
Thuyopsis, Siebold and Zuccarini.
Thymbra, Linnæus.
Thymelæa, Endlicher.
Thymus, Linnæus.
Thyrsacanthus, Nees.
Thyrsopteris, Kunze.
Thysanotus, R. Brown.
Tiarella, Linnæus.
Ticorea, Aublet.
Tigridia, Ker.
Tilia, Linnæus.
Tiliacora, Colebrooke.
Tillæa, Linnæus.
Tillandsia, Linnæus.
Tilletia, Tulasne.
Tinantia, Scheidweiler.
Tinnea, Kotsch.
Tipularia, Nuttall.
Tithonia, Desfontaines.
Tococa, Aublet.
Tocoyena, Aublet.
Todaroa, Achille Richard.
Toddalia, Jussieu.
Todea, Willdenow.
Tofieldia, Hudson.
Tolmiea, Torrey and Gray.
Tolpis, Adanson.
Tordylium, Linnæus.
Torenia, Linnæus.
Torreya, Arnott.
Torrubia, Tulasne.
Tortrix, Linnæus.
Tournefortia, Linnæus.
Tourretia, Jussieu.
Tovomita, Aublet.
Toxicodendron, Thunberg.
Toxicophlæa, Harvey.
Trachea, Guénée.
Trachelium, Linnæus.
Trachelospermum, Lemaire.
Trachycarpus, H. Wendland.
Trachymene, Rudge.
Trachystemon, Don.
Tradescantia, Linnæus.
Tragia, Linnæus.
Tragopogon, Linnæus.
Trametes, Fries.
Trapa, Linnæus.
Trautvetteria, Fischer and Meyer.
Treculia, Decaisne.
Tremandra, R. Brown.
Tremex, Jurine.
Trevesia, Visiani.
Trevoa, Miers.
Trewia, Linnæus.
Trianea, Karsten.
Trianthema, Linnæus.
Trias, Lindley.
Tribulus, Linnæus.
Trichantha, Hooker.
Trichilia, Linnæus.
Trichinium, R. Brown.
Trichocaulon, N. E. Brown.
Trichocentrum, Pœppig and Endlicher.

Genera and their Authors—*continued.*

Trichoceros, Humboldt, Bonpland, and Kunth.
Trichodesma, R. Brown.
Trichoglottis, Blume.
Trichomanes, Smith.
Trichopetalum, Lindley.
Trichopilia, Lindley.
Trichosacme, Zuccarini.
Trichosanthes, Linnæus.
Trichosma, Lindley.
Trichostema, Linnæus.
Tricoryne, R. Brown.
Tricuspidaria, Ruiz and Pavon.
Tricyrtis, Wallich.
Tridax, Linnæus.
Trientalis, Linnæus.
Trifolium, Linnæus.
Trifurcia, Herbert.
Triglochin, Linnæus.
Trigonella, Linnæus.
Trigonia, Aublet.
Trigonidium, Lindley.
Trilisa, Cassini.
Trillium, Linnæus.
Trimezia, Salisbury.
Trinia, Hoffmann.
Triodia, R. Brown.
Triolena, Naudin.
Triopterys, Linnæus.
Triosteum, Linnæus.
Triphasia, Loureiro.
Triphysaria, Fischer and Meyer.
Triplaris, Linnæus.
Tripsacum, Linnæus.
Tripterygium, J. D. Hooker.
Triptilion, Ruiz and Pavon.
Trisetum, Persoon.
Tristagma, Pœppig and Endlicher.
Tristania, R. Brown.
Triteleia, Lindley.
Trithrinax, Martius.
Triticum, Linnæus.
Tritonia, Ker.
Triumfetta, Linnæus.
Trixis, P. Browne.
Trizeuxis, Lindley.
Trochetia, De Candolle.
Trochiscanthes, Koch.
Trochocarpa, R. Brown.
Trollius, Linnæus.
Tropæolum, Linnæus.
Trophis, Linnæus.
Tropidia, Lindley.
Troximon, Nuttall.
Trymalium, Fenzl.
Tryphæna, Ochsenheimer.
Tsuga, Carrière.
Tulbaghia, Linnæus.
Tulipa, Linnæus.
Tunica, Scopoli.
Tupidanthus, J. D. Hooker and Thomson.
Tupistra, Ker.
Turnera, Linnæus.
Turpinia, Ventenat.
Turræa, Linnæus.
Tussacia, Reichenbach.
Tussilago, Linnæus.
Tychius, Germar.
Tydæa, Decaisne.
Tylophora, R. Brown.
Typha, Linnæus.
Typhonium, Schott.
Tytonia, G. Don.

Ulex, Linnæus.
Ullucus, Lozano.
Ulmus, Linnæus.
Umbellularia, Nees.
Uncaria, Schreber.
Uncifera, Lindley.
Ungnadia, Endlicher.
Uniola, Linnæus.
Unona, Linnæus, jun.
Uraria, Desvaux.
Urceolina, Reichenbach.
Urechites, Mueller.
Urena, Linnæus.
Urginea, Steinheil.
Urocystis, Rabenhorst.
Uroskinnera, Lindley.
Urospatha, Schott.
Urospermum, Scopoli.
Ursinia, Gærtner.
Urtica, Linnæus.
Urvillea, Humboldt, Bonpland, and Kunth.
Ustilago, Persoon.
Utricularia, Linnæus.
Uvaria, Linnæus.
Uvularia, Linnæus.

Vaccinium, Linnæus.
Vaillantia, De Candolle.
Valdivia, Remy.
Valeriana, Linnæus.
Valerianella, Mœnch.
Vallaris, Burmann.
Vallesia, Ruiz and Pavon.
Vallisneria, Linnæus.
Vallota, Herbert.
Vanda, R. Brown.
Vandellia, Linnæus.
Vanessa, Ochsenheimer.
Vangueria, Jussieu.
Vanilla, Swartz.
Veitchia, H. Wendland.
Velezia, Linnæus.
Vella, Linnæus.
Velleia, Smith.
Vellozia, Vandelli.
Veltheimia, Gleditsch.
Venidium, Lessing.
Ventilago, Gærtner.
Veratrum, Linnæus.
Verbascum, Linnæus.
Verbena, Linnæus.
Verbesina, Linnæus.
Vernonia, Schreber.
Veronica, Linnæus.
Verschaffeltia, Wendland.
Verticordia, De Candolle.
Vesicaria, La Marck.
Veslingia, Visiani.
Vespuccia, Parlatore.
Vestia, Willdenow.
Viborgia, Thunberg.
Viburnum, Linnæus.
Vicia, Linnæus.
Victoria, Lindley.
Vigna, Savi.
Viguiera, Humboldt, Bonpland, and Kunth.
Villanova, Lagasca.
Villaresia, Ruiz and Pavon.
Villarsia, Ventenat.
Vilmorinia, De Candolle.
Viminaria, Smith.
Vinca, Linnæus.
Vincetoxicum, Mœnch.
Viola, Linnæus.
Virgilia, La Marck.
Viscum, Linnæus.
Vismia, Vellozo.
Visnea, Linnæus, jun.
Vitex, Linnæus.
Vitis, Linnæus.
Vittaria, Smith.
Viviania, Cavanilles.
Voandzeia, Thouars.
Vochysia, Jussieu.
Vouapa, Aublet.
Voyria, Aublet.

Wachendorfia, Linnæus.
Wahlenbergia, Schrader.
Wailesia, Lindley.
Waitzia, Wendland.
Waldsteinia, Willdenow.
Wallichia, Roxburgh.
Walsura, Roxburgh.
Waltheria, Linnæus.
Warrea, Lindley.
Washingtonia, H. Wendland.
Watsonia, Miller.
Webera, Schreber.
Wedelia, Jacquin.
Weinmannia, Linnæus.
Welfia, H. Wendland.
Welwitschia, J. D. Hooker.
Wendlandia, Bartling.
Werneria, Humboldt, Bonpland, and Kunth.
Westringia, Smith.
Whiteheadia, Harvey.
Whitfieldia, Hooker.
Widdringtonia, Endlicher.
Wigandia, Humboldt, Bonpland, and Kunth.
Willdenowia, Thunberg.
Willemetia, Brongniart.
Willughbeia, Roxburgh.
Wistaria, Nuttall.
Witheringia, L'Héritier.
Witsenia, Thunberg.
Woodfordia, Salisbury.
Woodsia, Brown.
Woodwardia, Smith.
Wormia, Rottboell.
Wrightia, R. Brown.
Wulfenia, Jacquin.
Wulffia, Necker.
Wullschlægelia, Reichenbach, jun.
Wurmbea, Thunberg.
Wyethia, Nuttall.

Xanthisma. De Candolle.
Xanthium. Linnæus.
Xanthocephalum. Willdenow.
Xanthoceras. Bunge.
Xanthochymus. Roxburgh.
Xanthoriza. Marshall.
Xanthorrhœa, Smith.

Genera and their Authors—*continued.*

Xanthosia, Rudge.
Xanthosoma, Schott.
Xeranthemum, Linnæus.
Xeronema, Brongniart.
Xerophyllum, Michaux.
Xerotes, R. Brown.
Ximenia, Linnæus.
Xiphidium, Aublet.
Xylobium, Lindley.
Xylomelum, Smith.
Xylopia, Linnæus.
Xyris, Linnæus.
Xysmalobium, R. Brown.

Yponomenta, Latreille.
Yucca, Linnæus.

Zacintha, Gærtner.
Zalacca, Reinwardt.
Zaluzania, Persoon.
Zaluzianskia, J. W. Schmidt.
Zamia, Linnæus.
Zamioculcas, Schott.
Zannichellia, Linnæus.
Zanthoxylum, Linnæus.
Zauschneria, Presl.
Zea, Linnæus.
Zebrina, Schnitzlein.
Zehneria, Endlicher.
Zenobia, Don.
Zephyranthes, Herbert.
Zeuxina, Lindley.
Zeuzera, Latrielle.
Zexmenia, Llave and Lexarza.
Zieria, Smith.
Zilla, Forskahl.
Zingiber, Adanson.
Zinnia, Linnæus.
Zizania, Linnæus.
Ziziphora, Linnæus.
Zizyphus, Jussieu.
Zomicarpa, Schott.
Zomicarpella, N. E. Brown.
Zornia, Gmelin.
Zostera, Linnæus.
Zosterostylis, Blume.
Zygadenus, Michaux.
Zygopetalum, Hooker.
Zygophyllum, Linnæus.
Zygostates, Lindley.

PRONOUNCING DICTIONARY

OF THE

ORDINAL, GENERIC, AND SPECIFIC NAMES GIVEN IN THIS WORK.

By the Rev. PERCY W. MYLES, B.A. T.C.D.,

Senior Moderator and Gold Medallist of the University of Dublin, &c.

THE pronunciation of the scientific names of plants is, at present, in the same chaotic state in which their synonymy was until many specialists (such as Messrs. B. Daydon Jackson, J. Britten, and others) undertook to reduce it to some kind of order. Synonymy has been brought under settled rules; but pronunciation is still quite anarchic; "every man does that which is right in his own eyes." Take, for example, the two common garden genera, *Gladiolus* and *Clematis;* the name of each is pronounced in three quite different ways: in neither case is there any doubt whatever about the true pronunciation, and yet those who adopt it are in a very small minority indeed. The way in which many gardeners make havoc of the names of plants has been a frequent subject of satire with philologists and other writers: Dr. Peile, the new Master of Christ's College, Cambridge, gives some amusing instances of this in his works on Philology. But the gardeners have not been altogether to blame in this matter; they have had no accessible authority to consult, and accordingly have been free to exercise their own individual ingenuity (or eccentricity) in each case.

In the Pronouncing Dictionary now offered to the public an attempt has been made to supply some such standard of reference as is urgently needed. As it is the first "essay" in the English language (and, as far as we know, in any language) to fully examine the whole question on first principles, and afford information on all points

Pronouncing Dictionary—*continued.*

connected with pronunciation, it does not pretend to be more than an *attempt*. Kindly criticisms and corrections are earnestly invited for the purpose of attaining to a more accurate standard of pronunciation in future editions of the "Dictionary of Gardening." At any rate, an honest endeavour has now been made to obtain, from first sources, authoritative decisions on the subject.

For Accentuation and Quantity the works of Theophrastus, Dioscorides, and Pliny, have been re-read, so as to ascertain how far the present pronunciation has been distorted and vulgarised from the original names so often first given by these authors. In the special pronunciation of Latin attention has been paid to all the latest English authorities, such as the Syllabus issued by Messrs. Palmer and Munro in 1872, and, since that date, the works of Mr. A. J. Ellis (the greatest English authority on phonetics), of Dr. Kennedy, and of Mr. Roby, and the "Summary of Latin Pronunciation in the Augustan Period" lately issued by the Cambridge Philological Society. Of course, all the minute details given by these authorities have not been entered into or reproduced, nor have their points of variance been discussed; but an attempt has been made to draw from the consensus of leading scholars a broad general outline of the best information at present attainable on the *vexata quæstio* of Latin pronunciation.

In addition to the words of classical derivation which have been dealt with there are a number of names which are either derived from various other foreign tongues (*e.g.*, Arabic, Malay, the native languages of America, &c.), or are commemorative, *i.e.*, are derived from the names of eminent botanists, and others who have been intimately connected with botanical studies. To inquire afresh into the accurate pronunciation of all these names has not been found practicable for the present; and, accordingly, when it was impossible to obtain from printed authorities original information as to the foreign and commemorative names, those English botanists who have most fully entered into the subject have been carefully consulted. Among such botanists may be specially mentioned Withering in his "Systematic Arrangement," and Lindley in Loudon's "Encyclopædia of Plants" and in Paxton's "Botanical Dictionary." In recent times, Mr. Randal H. Alcock in his "Botanical Names," Sir J. D. Hooker in the "Student's Flora," Mr. W. B. Hemsley in his "Handbook of Trees, Shrubs, and Herbaceous Plants," and Mr. N. E. Brown in the Index to "English Botany," have bestowed considerable attention on the subject; though they have not had occasion to advance far into this wide field. In this Pronouncing Dictionary names derived from extra-classical languages, or, as they are sometimes called, aboriginal names, are printed altogether in italics; commemorative words and those of geographical origin have in

Pronouncing Dictionary—*continued.*

italics as much of the name from which they are derived as is reproduced in them—*e.g.*, Abuta (the name given by the natives in Guiana) appears *Ab-u′-ta*; Abatia (commemorative of Peter Abat) is printed *Ab-a′-tĭ-a*; antwerpensis (from Antwerp) *ant-werp*-en′-sis. Geographical and commemorative names, however, which were used in classical Latin, remain in the common type, *e.g.*, Ad-o′-nis, æth-ĭ-op′-ic-a.

All the words which are printed in ordinary type are presumed to be derived from Greek or Latin; and to enable the tyro to pronounce them with comparative accuracy the following special rules are given with regard to the three most important points.

I. *Accentuation (Stress of Voice).*—The sign ′ marks the syllable on which the accent or stress of voice falls. It has nothing to do with the quantity of the syllable, which may be either long or short: *e.g.*, am-ā′-ra, Al-ĭs′-ma. The secondary accent of polysyllables must be at least two syllables before the primary accent: *e.g.*, Ac′-ti-nol′-ep-is, Ac-ti′-noph-yl′-lum; but as the secondary accent is generally obvious and of comparatively little importance, it is only inserted in cases where doubt might arise.

II. *Quantity (Length or Shortness of Syllables).*—In this Dictionary, as a general rule, the quantity is shown by the manner in which the words are divided. When a vowel terminates any syllable, except the last, it is to be sounded long. When the syllable terminates with a consonant, the preceding vowel is to be considered short. This manner of dividing the words into syllables has been selected as the clearest way of showing the quantity of each vowel to ordinary readers; it is, of course, quite different from scientific syllabication, such as that of Mr. Ellis, which would be confusing to all except classical scholars: but as it is our primary object to be intelligible, even to the unlearned, we have preferred an approximation to the truth which can be easily understood by everyone. The following words, which are printed at the foot of each page, will exemplify the mode of distinguishing the quantity which has been adopted.

Short, as in	**ăp-art**	**slĕn-der**	**thĭn**	**rŏt-ten**	**pow-er-fŭl**
Long, as in	**psā-lmist**	**vē-ined**	**mach-ī-nist**	**vō-ter**	**rū-ler**

Diphthongs are always long. At the end of a word, a is almost always short; e, generally long; i, almost always long. Exceptions to these rules are marked long (-) or short (˘).

III. *Pronunciation of Particular Letters.*—Most of the scientific names of plants, and other terms used in Botany, are derived from the Greek and Latin languages, and even the words originally from the Greek have been generally Latinised, *i.e.*, made to conform to Latin rules. The manner in which Latin has been, until lately, pronounced in this country

Pronouncing Dictionary—*continued.*

is thoroughly inaccurate and unscientific, and so entirely insular that in speech it is often quite unintelligible to foreigners, even to those who are good Latin scholars. As one of the chief advantages of the uniform Latin nomenclature of plants is that thus a sort of universal or international language is created, it is evident how much has been lost by our prejudiced adherence to a provincial mode of pronunciation. The modern English system of pronouncing Latin, long familiar in Dublin usage as far as the vowels are concerned, sanctioned by the Professors of Latin at Oxford and Cambridge in 1872, and lately made obligatory for honours at Cambridge, will undoubtedly be universally adopted in the future. It represents the actual pronunciation of the words when Latin was a living language; and it conforms to Continental usage, so that by its use the scientific names of plants are easily understood in conversation by educated men of every nation. After much consideration, and consultation with several eminent botanists, it has been determined to follow this system in the present work. The difference between the method which is now happily becoming obsolete and the accurate method which is taking its place will be understood from the following examples, in which an attempt is made to represent Latin sounds by their nearest English equivalents:

OLD METHOD.

Vowels.

a, short, as in *făt*. a, long, as in *bāther*.
e, ,, ,, *slĕnder*. e, ,, ,, *ēvil*.
i, ,, ,, *thĭn*. i, ,, ,, *īce*.
o, ,, ,, *rŏtten*. o, ,, ,, *vōter*.
u, ,, ,, *stŭbborn*. u, ,, ,, *mūle*.
y, ,, ,, *cўnical*. y, ,, ,, *cўpher*.

Diphthongs.

æ, œ as *ee* in feed.
ei as in the word *eye*.
au as *aw* in b*aw*l.

Consonants.

c and g hard before a, as in *c*ats, *g*aping.
,, ,, ,, o ,, *c*ows, *g*oring.
,, ,, ,, u ,, *c*ud, *g*ulping.
c and g soft before e ,, *c*entral, *g*entleman.
,, ,, ,, i ,, *c*ircular, *g*in.
,, ,, ,, y ,, *c*ynical, *g*ymnast.

CORRECT METHOD.

Vowels.

a, short, as in *ă*part. a, long, as in ps*ā*lmist.
e, ,, ,, sl*ĕ*nder. e, ,, ,, v*ē*ined.
i, ,, ,, th*ĭ*n. i, ,, ,, mach*ī*nist.
o, ,, ,, r*ŏ*tten. o, ,, ,, v*ō*ter.
u, ,, ,, powerf*ŭ*l. u, ,, ,, r*ū*ler.

y is sounded nearly like i, but the exact sound cannot be represented in English.

Diphthongs.

æ, œ, ei nearly as *ai* in p*ai*n.
au as *ou* in h*ou*se.

Consonants.

g always hard, as in *g*ood.
c ,, ,, ,, muscular.
ch ,, ,, ,, *Ch*ristian.

Pronouncing Dictionary—*continued.*

N.B.—When a specific name is in the form of an ordinary Latin adjective, only one termination has generally been given; *e.g.*, of those in *us, a, um,* the form ab-brev-ĭ-a′-tus is used only when the generic or substantive name is masculine; but every reader can see for himself that ab-brev-ĭ-a′-ta (the feminine) and ab-brev-ĭ-a′-tum (the neuter) are to be pronounced in similar fashion. The same rule has been adopted with those in *is, e,* as tris′-tis, tris′-tē; but adjectives in *er, ra, rum,* as nig′-er, nig′-ra, nig′-rum, and those in *er, ris, re,* as a′-cer, a′-cris, a′-crĕ, have been given in the different forms in which they occur.

At the end of the Pronouncing Dictionary the principal words whose correct pronunciation differs strikingly from that in ordinary use will be discussed.

Ab-a′-ma*
Ab-a′-tĭ-a
ab-brev-ĭ-a′-tus
ab-chas′-ic-us
*Ab-el′-ĭ-a**
Ab-e′-na
Ab′-ĭ-ēs
Ab-ĭ-et-in′-ĕ-æ
Ab′-ĭ-et-is
Ab-o′-bra
Ab-ol′-bod-a
ab-or-ti′-vum
Ab-rax′-as
Ab-ro′-ma
Ab-ro′-nĭ-a
ab-rot′-an-if-ol′-ĭ-um*
ab-rot′-an-ŏ-i′-dēs*
Ab-rot′-an-um
ab-rup′-tum
A′-brus
ab-sciss′-us
Ab-sin′-thĭ-um
Ab-u′-ta
ab-u-til-ŏ-i′-dēs
Ab-u′-til-on
ab-yss-in′-ic-us
Ac-a′-cĭ-a
Ac-æ′-na
Ac-al′-yph-a
Ac-anth-a′-cĕ-æ
ac-anth-if-ol′-ĭ-a
Ac-anth′-ĭ-um
ac-anth-oc′-om-a*
ac-anth-o′-dēs*
Ac-anth-ol-i′-mōn*
Ac-anth-op′-an-ax
Ac-anth-oph-ipp′-ĭ-um
Ac-anth-oph-œ′-nix
Ac-anth-orh-i′-za*
Ac-anth-ost-ach′-ў-um*
Ac-anth′-us
Ac-ar′-id-a
ac-au′-lis
ac-ce′-dens
ac-eph′-al-a*
Ac′-er*
Ac-er-a′-cĕ-æ
Ac-er-anth′-us
Ac′-er-as
Ac-er-at′-ĭ-um
ac-erb′-a
ac-er-if-ol′-ĭ-um
Ac-er-in′-ĕ-æ
ac-er′-in-um
Ac-er-it′-ĭ-um
ac-er-ŏ-i′-dēs
ac-er-o′-sa
Ac-e′-ti
Ac-e-to′-sa
Ac-e-to-sel′-la
Ach-an′-ĭ-a
Ach-er-ont′-ĭ-a
Ach-ill-e′-a
ach-ill-e′-æ-fol′-ĭ-a
ach-ill-e′-ŏ-i′-dēs
Ach-i-me′-nēs
Ach-i′-ras
Ach′-ras
Ach-rŏ-anth′-ēs
Ach-yr-anth′-ēs
Ach-yr-on′-ĭ-a
Ach-yr-op-ap′-pus
ac-ic′-ol-um
ac-ic-ul-a′-ris
ac′-id-a
ac-id-is′-sim-a
ac-in-a′-cĕ-um
ac-in-a′-cif-ol′-ĭ-a
Ac-in-e′-ta
ac-in-op-et′-al-a
Ac′-in-os
Ac-in-o′-tus*
Ac-ĭ-o′-tis
Ac-iph-yl′-la*
A′-cis
Ac-is-an-the′-ra*
Ack-er-man′-ni
Ac-land′-ĭ-æ
Ac-mad-e′-nĭ-a
Ac-mel′-la
Ac-me′-na
Ac-o′-kan-the′-ra
ac-on-if-ol′-ĭ-a
Ac-on-ĭ-op′-ter-is*
ac-on-i-tif-ol′-ĭ-us
Ac-on-i′-tum
Ac-on′-tĭ-as
Ac′-or-us
Ac-rad-e′-nĭ-a
Ac-rid-oc-arp′-us
Ac-rĭ-op′-sis
a′-crĕ*
a′-cris
ac-roc′-lad-on*
Ac-roc-li′-nĭ-um*
Ac-roc-om′-ĭ-a
Ac-ron-ych′-ĭ-a
Ac-ron-yc′-ta
Ac-rop-e′-ra*
Ac-roph′-or-us*
Ac-roph-yl′-lum
Ac-rop′-ter-is
Ac-ros-anth′-ēs
Ac-ros-por′-ĭ-um
ac-ros′-tich-ŏ-i′-dēs
Ac-ros′-tich-um*
Ac-rot′-rich-e*
ac-rot′-rich-um
Ac-tæ′-a
Ac-ti-nel′-la
Ac-ti′-nĭ-a
Ac′-ti-nid′-ĭ-a
Ac-ti′-nĭ-op′-ter-is
Ac-ti′-noc-ar′-pus
Ac′-ti-nol′-ep-is*
Ac′-ti-nom′-er-is*
Ac-ti′-non-e′-ma*
Ac-ti′-noph-yl′-lum
Ac′-ti-nost′-ach-ys

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: á as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ow* in *house*; **g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)**

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ac′-ti-nost′-rob-us
Ac-ti-no′-tus
ac-u-lĕ-a′-tus
ac-u-lĕ-ol-a′-tus
Ac-u′-lĕ-us
ac-u′-min-a′-ta
Ac-un′-na
ac-u′-ta
ac-u-tang′-ul-a
ac-u-tif′-id-a
ac-u′-tif-lo′-ra*
ac-u′-tif-ol′-ĭ-a
ac-u-til′-ob-a*
ac-u′-tip-et′-al-a
Ac-yn′-tha
A′-da
Ad-am′-i
Ad-am′-ĭ-a
Ad-am′-sĭ-a
Ad-an-so′-nĭ-a
Ad-el′-gēs
Ad-e′-lob-ot′-rys*
Ad-e-nand′-ra
Ad-e-nan-the′-ra
Ad-e-nan′-thos
Ad-e-ni-le′-ma
*A-den′-ĭ-um**
Ad-e-noc-al-ym′-na
Ad-e-noc-ar′-pus
Ad-e-noph′-or-a
Ad-e-nop-od′-ĭ-a*
Ad-e-nost′-om-a*
Ad-e-nos′-tyl-ēs
Ad-e-not-rich′-ĭ-a
Ad-es′-mĭ-a
Ad-hat′-od-a
ad-ĭ-ant-if-ol′-ĭ-a
ad-ĭ-ant-ŏ-i′-dēs
Ad-i-ant-op′-sis
Ad-ĭ-ant′-um
Ad′-ik-e
Ad′-in-a
Ad-lu′-mĭ-a
ad-mi-ra′-bil-is
ad-nasc′-ens
ad-na′-tum
Ad-o′-nid-um
Ad-o′-nis
ad-press′-a
ad-scend′-ens
ad-spers′-us
ad-surg′-ens
ad-ul-ter-i′-nus
ad-umb-ra′-ta
ad-un′-ca
ad′-ven-a
Æch′-mĕ-a
Æc-id′-ĭ-um
Æg-ic′-er-as
Æg′-il-ōps
Æg-iph′-il-a*
Æg′-le
æg′-ra
æg-yp′-tĭ-ac-a
æg-yp′-tic-a
æm′-ul-um
æn′-ĕ-a
Æ-ol-anth′-us
Æ-o′-nĭ-um
æ-quin-ox-ĭ-a′-lis
æ-quip-et′-al-a
æ-quit-ril′-ob-a
A-er-anth′-us
A-er-i′-dēs
A-er-ob′-ĭ-on
ær-u-gin-o′-sum
Æs-chyn-anth′-us
Æs-chyn-om′-en-e
æs-cul-if-ol′-ĭ-a
Æs′-cul-us
æs-ti-va′-lis
æs-ti′-vus
æs′-tŭ-ans
Æth-ĭ-on-e′-ma
æth-ĭ-op′-ic-a
æth-u-sif-ol′-ĭ-a
æt-nen′-sis
af-fi′-nis
af-ric-a′-na
a′-frum
Af-zel′-ĭ-a
Af-zel′-ĭ-i
Ag-al′-myl-a
Ag-an-is′-ĭ-a
Ag-an-os′-ma
Ag-ap-anth′-us
Ag-ap-e′-tēs
Ag-ard′-hĭ-i
Ag-ar′-ic-us
Ag-ast′-ach-ys
Ag′-ath-a
Ag-ath-æ′-a
Ag′-ath-is
Ag′-ath-om′-er-is
Ag′-ath-oph-yl′-lum
Ag′-ath-os′-ma
Ag′-ath-o′-tēs
Ag′-ath-yr′-sus
Ag-a′-ti
Ag-a′-ve*
ag-a′-vŏ-i′-dēs
ag-e′-rat-ŏ-i′-dēs
Ag-e′-rat-um*
Ag-e′-rĭ-a
ag-greg-a′-tum
Ag-læ′-a
Ag-lai′-a
Ag-lă-om-orph′-a
Ag-lă-on-e′-ma
ag-ni′-num
Ag-no′-stus
Ag′-nus-cas′-tus
Ag-os′-er-is
Ag′-raph-is
ag-rest′-is
ag-rif-ol′-ĭ-a
Ag′-ril-us
Ag-rim-o′-nĭ-a
Ag-rĭ-o′-tēs
Ag-rop-y′-rum*
Ag-rost-em -ma
Ag-ro-stic′-ul-a
Ag-ro′-stis*
Ag-ro′-tis
Ag-yl-oph′-or-a
Ah-ou′-ai
ai-lant-if-ol′-ĭ-a
Ai-lant′-us
Ains-læ′-a
Ains-worth′-ĭ-i
A-i′-phan-ēs
A-i′-pi
Ai′-ra
Aitch-is-o′-ni
Ai-to′-nĭ
*Ai-to′-nĭ-a**
Ai-to-nĭ-a′-na
a-i-zo-i′-dēs
A-i-zo′-on*
Aj-a′-cis
aj-an-en′-sis
A′-jax
Aj-u′-ga*
Ak-e′-bĭ-a
Al-ang-ĭ-a′-cĕ-æ
Al-ang′-ĭ-um
Al-ar-co′-nĭ-a
al-a′-ta
al-at-av′-ic-us
Al-at-ern′-us
Al-at′-ip-ēs
al-a′-tus
al′-ba
al-bel′-lus
Al-bert′-i
al-besc′-ens
al′-bic-ans
al-bic-aul′-is
al′-bid-a
al-bid′-ul-um
al-bif-lo′-rum
al′-bif-rons
al-bin-a′-tum
al-bis-pi′-na
al-biv-e′-nĭ-a
Al-biz′-zĭ-a
al-bo-cinc′-ta
al-bo-spi′-ca*
al-bo-sti′-pes*
Al-bu′-ca
al′-bul-us
al′-bus
Al-can′-na
Al′-cĕ-a
Al-chem-il′-la
al-chem-ill-ŏ-i′-dēs
alc-ic-orn′-ŏ
alc-ŏ-i′-dēs
Al-coqu-ĭ-a′-na
Ald′-ĕ-a
Al-ec-tor-ol′-oph-us*
Al-e′-grĭ-a
al-epp′-ic-um
Al-et′-ris
al-et-rŏ-i′-dēs

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā*′-lmist; ĕ as in sl*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*ŏ*t′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch. always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Al-eu-ri′-tēs
Al-eu-ri-top′-sis
Al-ex-an′-dræ
Al-ey-ro′-dēs
Al′-ga
Al′-gæ
Al-gar-o′-bĭ-a
al-gar-ven′-sĕ
al-ge′-rĭ-en′-sis
al′-gid-a
Al-ha′-gi
Al-ib-ĕr′-tĭ-a
Al-ic-ast′-rum
Al-ic′-ĭ-æ
al-ĭ-e′-num
Al-ip′-sa
Al-is′-ma
Al-is-ma′-cĕ-æ
al-is-mæ-fol′-ĭ-um
Al-kek-eng′-i
All-am-an′-da
All-an-to′-dĭ-a
All-ardt′-ĭ-a
all-ĭ-a′-cĕ-a
All-ĭ-a′-rĭ-a
All-ĭ-a′-rĭ-æ
All′-ĭ-i
All-ĭ-o′-nĭ-i
All′-ĭ-um
All-ob-rog′-ĭ-a
All-och′-lam-ys
all-oph-yll′-a
All-oph-yll′-us
All-op-lec′-tus
All-os-o′-rus*
Al-mei′-dĕ-a
al-nif-ol′-ĭ-a
Al′-nus
Al-oc-as′-ĭ-a
Al′-ŏ-e*
al-ŏ-i′-dēs
al-ŏ-if-ol′-ĭ-um
Al-o′-mĭ-a
Al-o′-na
Al-on-so′-a
al-o-pec-u-rŏ-i′-dēs
al-o′-pec-u-rŏ-i′-dĕ-um
Al-oph′-ĭ-a
Al-oy′-sĭ-a
al-pest′-ris
al-pi′-na
Al-pi′-nĭ-a
Al-sob′-ĭ-a
Al-so-dei′-a
Al-soph′-il-a
Al-sto′-nĭ-a
Al-strö-mer′-ĭ-a
al-tac-*le*-ren′-se
Al-tag-a′-na
al-ta′-ic-a
al-ta′-ĭ-en′-sĕ
Alt-en-stei′-nĭ-i
al-tern′-ans
Al-tern-anth-e′-ra
Al-tern-a′-rĭ-a
Al-tern-a′-rĭ-æ
al-tern-if-ol′-ĭ-a
Al-thæ′-a
al-thæ-if-ol′-ĭ-a
al-thæ-ŏ-i′-dēs
Al′-tic-a
al′-tif-rons
al-tiss′-im-a
Al-u-cit-i′-na
al-ut-a′-cĕ-um
al-wart-en′-sis
Al-y′-pum
Al-yss′-um
am-a′-bil-is
Am-al′-ĭ-a
Am-al′-ĭ-æ
Am-al′-ĭ-as
Am-an′-ca-ēs
Am-an-i′-ta
am-a′-ra
Am-ar-ant-a′-cĕ-æ
Am-ar-ant′-us
am-a-ric-au′-lis
am-a-ris-sim′-a
Am-ar-yl-lid′-ĕ-æ
am-ar-yl′-lid-if-ol′-ĭ-a
Am-ar-yl′-lis
Am-as-o′-nĭ-a
am-as-o′-num
am-big′-ŭ-el′-la
am-big′-u-um
Am-bly-an-the′-ra
am-bly′-od-on*
*am-boi-ne*n′-sĕ
*am-boy-ne*n′-sis
Am-bros-i′-nĭ-a
am-bros′-ĭ-ŏ-i′-dēs
Am-el-an′-chĭ-er
am-el-lŏ-i′-dēs
Am-el′-lus
am-er-ic-a′-na
Am-er-im′-non
Am-er-im′-num
am-eth-ys-ti′-na
am-eth-ys-tog-lōs′-sa
Am-hers′-tĭ-a
Am-hers′-tĭ-æ
Am-hers′-tĭ-a′-na
Am-ĭ-anth′-em-um
Am-i′-cĭ-a
am-il′-la-ris
Am-mob′-ĭ-um*
Am-moch′-ar-is*
Am-mod-en′-dron
Am-mog-e′-tōn*
Am-mo-ni′-ac-um
Am-myr′-sin-e
Am-œ′-bæ
am-œ′-na
am-œ′-nul-a
Am-o′-moph-yl′-lum
Am-o′-mum
Am-orph′-a
am-orph-ŏ-i′-dēs
Am-orph′-oph-al′-lus
am-pel-oph′-ag-um
Am-pel-op′-sis
Am-pel-os-ic′-ŷ-os
am-phib′-ĭ-um
Am-phib-lem′-ma
Am-phib-le′-stra
Am-phic-ar-pæ′-a
am-phic-ar′-pos
Am-phic′-om-e
Am-phil-ob′-ĭ-um*
Am-phil-oph′-ĭ-um
Am-phi′-ōn
Am-phip′-od-a
am-phor-a′-ta
am-phos-te′-mōn*
am′-pla
am-plex′-ic-au′-lis
am-plĭ-a′-tus
am-plif-lo′-rum
am-plis′-sim-um
am-pul-la′-cĕ-us
am-pul-la′-rĭ-a
Am-so′-nĭ-a
am-ur′-en-sĕ
Am-yg′-dal-i
am-yg′-dal-if-ol′-ĭ-a
am-yg′-dal-i′-na
am-yg′-dal-ŏ-i′-dēs
Am-yg′-dal-op′-sis
Am-yg′-dal-us
am-yl-ob-ac′-ter
am-yl-ov′-or-us
Am-yr-id-a′-cĕ-æ
Am′-yr-is
An-ac-amp′-ser-os
An-ac-amp′-tis
an-ac-anth′-a
An-ac-ar-dĭ-a′-cĕ-æ
An-ac-ar′-dĭ-um
An-ad-e′-nĭ-a
An-ag-al′-lis
An-ag′-yr-is
An-a′-nas
An-a-nas′-sa
An-anth′-er-ix
An-ap-el′-tis
An-ar-rhi′-num
An-ar′-sĭ-a
An-as-tat′-ic-a
an′-ceps
An-chi-e′-tĕ-a
Anch-is′-tĕ-a
Anch-om′-an-ēs
anch-or-if′-er-a
An-chu′-sa
an-chu′-sæ-fol′-ĭ-a
an-chu-sŏ-i′-dēs
An-chu-sop′-sis
an-cil′-la
An-cyc-loc′-lad-us
An-cyc-log′-yn-e*
An-der-so′-ni
An-der-so′-nĭ-a
An-der-so-nĭ-a′-num
An-der-so′-nĭ-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten: ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in mu*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

and-ic′-ol-a
and-ig′-en-um
and′-in-um
An′-*di*-*ra*
An-drach′-ne
an-drach′-nŏ-i′-dēs
An′-*dre*-æ
An-*dre*-a′-num
An-*dreu*′-*si*-a
An-*drew*′-*sĭ*-i
An-*drew*-*si*-a′-na
An-*drew*′-*sĭ*-i
An′-dric-us
An-*dri*-*eux*′-ĭ-i
An-droc-ym′-bĭ-um
an-drog′-yn-us
An-drol′-ep-is
An-drom-ach′-ĭ-a
An-drom′-ed-a
an-drom′-ed-æ-flo′-ra
an-drom′-ed-æ-fol′-ĭ-a
An-drop-o′-gŏn*
An-dros′-ac-e*
an-dros-ac′-ĕ-a
an-dros-æ′-mif-ol′-ĭ-um
An-dros-æ′-mum
An-dros-teph′-ĭ-um*
An-dry′-al-a
An-ec-och-i′-lus
An-ei-le′-ma
an-*ei*-*ten*′-sĕ
An-e′-mĭ-a*
An-e′-mid-ic′-tў-on
An-e′-mĭ-op′-sis
an-em-o′-næ-flo′-rus
an-em-o′-næ-fol′-ĭ-um
An-em-o′-ne*
An-em-o′-nēs
an-em-o′-nif-ol′-ĭ-us
an-em-o′-nŏ-i′-dēs
An-em-o-nop′-sis
An-em-op-æg′-ma
an-e′-thif-ol′-ĭ-a
An-e′-thum
an-frac-tŭ-o′-sum
An-gel′-ic-a
An-*gel*-*o*′-*nĭ*-a
An-gi-anth′-us
An-gi-op′-ter-is
an-*go*′-*len*-sĕ
An-goph′-or-a
An-*græ*′-*cum*
an-guic′-id-a
an-guif′-ug-a
An-guil-lul′-id-æ
ang-ui′-na
an-guin′-ĕ-a
An-*gui*′-*ci*
ang-ul-a′-ris
ang-ul-a′-ta
ang-ul′-ig-er
Ang-*ul*-*o*′-*a*
ang-ul-o′-sa
An-gu′-rĭ-a
an-gus -ta
an-gus-ta′-tus
an-gus-tif-ol′-ĭ-a
an-gus′-tĭ-or
an-gus′-tĭ-or-a′-na
an-gus-tip-in′-nul-a
An-hal-o′-nĭ-um
A′-nĭ-a
An-ig-oz-anth′-us
An′-*il*
An-is-anth′-us*
an-i-sa′-ta
An-is-och-i′-lus
An-is′-od-us
An-is-og-o′-nĭ-um*
an-is-ol′-ob-a
An-is-ol′-ob-us
An-is-om′-el-ēs
An-is-op-et′-al-um
an-is-oph-yl′-lus
An-i′-sum*
An-*næ*′-i
An-*nes*-*le*′-i
an-no′-sus
an-no′-tin-um
an′-nŭ-a
an-nul-a′-rĕ
an-nul-a′-tum
an-nul′-ip-ēs
An-œc′-toch-i′-lus*
An′-om-a
an-o′-mal-a
An-om-ath-e′-ca*
An-om-orh-ēg′-mĭ-a
An-*o*′-*na*
An-o-na′-cĕ-æ
An-o′-nym-os
an-op-et′-al-um
An-op-lanth′-us
An-op-loph′-yt-um*
An-op′-ter-us
an-os′-mum
An-*sel*′-*lĭ*-a
An-ser-i′-na
an-ser-i′-næ-fol′-ĭ-a
ant-arc′-tic-a
An-ten-na′-rĭ-a
An-ten-nif′-er-a
Ant-eu-phorb′-ĭ-um
ant-hel′-mĭ-a
Anth′-em-is*
an-them-ŏ-i′-dēs
an-the′-ra-rum
anth-er-ic′-lis
Anth-er′-ic-um
an-the-ro′-sa
an-the-ro′-tēs
Anth-id′-ĭ-um
Anth-oc-er′-cis
Anth-od′-on
Anth-ol-o′-ma*
Anth-ol-y′-za
Anth-om-y′-ĭ-a
Anth-on′-om-us
Anth-op-o′-gŏn
An′-thor-a
Anth-os-per′-mum
Anth-ot-ax′-is
Anth-ot-ax′-um
Anth-ox-anth′-um
an-thris′-cif-ol′-ĭ-a
An-thris′-cus
an-thro′-poph-ag-o′-rum
an-thro-poph′-or-a
An-thu′-rĭ-um
An-thyl′-lis
an-tĭ-ac-anth′-a
An-*ti*-*a*′-*ris*
An-tic-le′-a
an-tid-ys′-en-ter′-ic-a
An-tig-o′-non*
An-tig-ram′-me
an-*til*-*la*′-na
An′-tĭ-op-a
an-*tĭ*-*oq*-*uĭ*-en′-sis
an-tip′-od-a
an-ti′-qua
an-ti-quo′-rum
An-tir-rhi′-nĕ-æ
an-tir-rhi′-nŏ-i′-dēs
An-tir-rhi′-num
An-tis′-pil-a
An-to′-nĭ-a
An-troph′-ў-um
ant-*werp*-en′-sis
anx-*an*′-tic-a
A-o′-tus
Ap-at-u′-rĭ-a
Ap-*e*′-*i*-*ba*
ap-en-ni′-na
Ap-en′-ul-a
ap-er′-ta
ap-er′-tif-lo′-ra
ap-et′-al-a
Aph-el-an′-dra
aph-el-an′-dræ-flo′-ra
Aph-el-ex′-is
Aph′-id-ēs
Aph-il-oth′-rix
Aph′-is
Aph-rod-i′-te
Aph-roph′-or-a
aph-yl′-la
Aph-yl-lanth′-ēs
ap-ic-a′-ta
ap-ic′-id-ens
Ap-ic′-ra
ap-ic-ul-a′-tum
ap-if′-er-a
ap-if-or′-mis
ap′-ĭ-i
ap′-ĭ-i-fol′-ĭ-um
Ap-*in*-*a*′-*ga*
ap-ĭ-oph′-il-a
Ap′-ĭ-os
Ap-ĭ-os-per′-mum
Ap′-is
Ap′-ĭ-um*
Ap-lec′-trum
Ap-lop-ap′-pus
Ap-loph-yl′-lum

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ă*p*-art′; ā as in ps*ā*′-lmist; ĕ as in sl*e*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*ŏt*′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ap-lot-ax′-is
Ap-oc-yn-a′-cĕ-æ
Ap-oc′-yn-um*
ap′-od-a
ap-od-anth′-us
Ap-on-og-e′-ton
Ap-or-e′-tic-a
Ap-or′-ĭ-a
ap-pen-dic-ul-a′-tum
ap-plan-a′-ta
Applĕ-by-a′-na
ap-plic-a′-ta
ap′-ter-a
Ap-ter-anth′-ēs
Ap-to-sim′-ĕ-æ
Ap-to′-sim-um
ap-ur-en′-sis
a′-pus
Aq-uār′-tĭ-a
aq-uat′-ic-us
aq-uat′-il-is
aq′-uĕ-um
Aq-uif-ol′-ĭ-a′-cĕ-æ
Aq-uif-ol′-ĭ-um
Aq-uil-e′-gĭ-a
aq-uil-e′-gif-ol′-ĭ-um
aq-uil-i′-na
aq-uo′-sus
ar-ab′-ic-a
ar-ab′-id-if-lo′-rum
ar-ab-id′-ĭ-ŏ-i′-dēs
Ar′-ab-is*
Ar-a′-cĕ-æ
Ar′-ach-is
Ar-ach-nan′-the
Ar-ach-nim-orph′-a
Ar-ach-ni′-tēs
ar-ach-ni′-tis
ar-ach-nŏ-i′-dēs
ar-ach-nŏ-i′-dĕ-um
Ar-a′-lĭ-a
Ar-a′-lĭ-a′-cĕ-æ
ar-a-nif′-er-a*
Ar-ar-a′-ti
Ar-au-ca′-rĭ-a
Ar-au-ca′-ri-ĕ-æ
Ar-au-ca′-rĭ-ŏ-i′-dēs
Ar-au′-ja
ar-bor′-e-a
ar-bor-es′-cens
Ar-bus′-cul-a
ar′-but-if-ol′-ĭ-a
ar′-but-ŏ-i′-dēs
Ar′-but-us*
Ar′-ce-i
Arch-an-gel′-ic-a
Arch′-er-i
Arch-er-ĭ-a′-na
Arch-on′-toph-œ′-nix
ar-col-a′-ta
Arc′-tĭ-a
arc′-tic-a
Arc-tos-taph′-yl-os*
Arc-toth-e′-ca
Arc-to′-tis
Arc-tu′-rus
ar-cŭ-a′-ta
ar′-dens
Ar-dis′-ĭ-a
Ar-do-i′-ni
Ard-ŭ-en-nen′-sĕ
Ard-ŭ-i′-na
Ar-e′-ca
Ar-e-na′-rĭ-a
Ar-e-na′-rĭ-æ
Ar-en-berg′-ĭ-a
Ar-en-berg-ĭ-a′-na
Ar-en′-ga
ar-e-no′-sa
ar-ĕ-ol-a′-tum
Ar-eth-u′-sa
Ar-e′-tĭ-a
ar-e′-tĭ-ŏ-i′-dēs
Ar′-gan
Ar-gan′-ĭ-a
Ar-gem-o′-ne*
ar-gen-tæ-flo′-ra
ar-gen-ta′-ta
ar-gen′-tĕ-us
Ar-gol-as′-ĭ-a
ar-goph-yl′-lus
ar-gos′-path-a*
ar-gu-nen′-se
Ar′-gus
ar-gu′-ta
ar-gyr-æ′-a
Ar-gyr-ei′-a
ar-gyr-i′-tes
Ar-gyr-och-æ′-ta
ar-gyr-on-eu′-rus
ar-gyr-oph-yl′-la
Ar-gyr-oph′-yt-on
ar-gyr-os-tig′-ma
Ar-gyr-ox-yph′-ĭ-um
A′-rĭ-a
ar′-id-us
ar-ĭ-et-i′-na
a-rif-ol′-ĭ-a
Ar′-i-ōn
A-ris-æ′-ma
Ar-is′-ar-um
ar-is-ta′-ta
Ar-is′-tĕ-a
Ar-is′-tol-och′-ĭ-a*
Ar-is′-tol-och-ĭ-a′-cĕ-æ
Ar-is′-tom-en′-ĭ-a
ar-ist-o′-sa
Ar-ist-ot′-el-a*
Ar-ist-ot-el′-ĕ-a
Ar-ist-ot-el′-ĭ-a
Ar-i′-za
Ar-ju′-na
Ar-mad-il′-lo
ar-ma′-tus
Ar′-men-a
Ar-men′-ĭ-ac-a
Ar-me′-rĭ-a
ar-mil-la′-ris
ar-mil-la′-ta
Ar-min′-ĭ-i
Ar-mit-ag-e-a′-nus
Ar-mor-a′-cĭ-a
Ar-ne′-bĭ-a
Ar′-nic-a
Ar-nop-o′-gōn
Ar-not′-ĭ-i
Ar-not-tĭ-a′-na
A-roi′-dĕ-æ
ar-o-mat′-ic-um
Ar-o′-mĭ-a
Ar-o′-nĭ-a
Ar-o-ni′-cum*
Ar-poph-yl′-lum
Ar-rac-a′-cha
ar-rag-on-en′-sis
ar-rec′-ta
Ar-rhos-tox′-yl-um
Art-ab-ot′-rys
Art-an-e′-ma
Art-anth′-e
Art-em-is′-ĭ-a
Arth-op′-ter-is
Arth-roph-yl′-lum
Arth-rop-od′-ĭ-um*
Arth-rop′-ter-is
Arth-ros-tem′-ma
Arth-rot-ax′-is
Arth-ur-ĭ-a′-num
ar-tic-ul-a′-ta
Ar-toc-ar′-pĕ-æ
ar-toc-ar′-pif-ol′-ĭ-a
Ar-toc-ar′-pus
A′-rum
A-run′-cus
ar-un-din-a′-cĕ-a
Ar-un-din-a′-rĭ-a
Ar-un′-do
ar-va′-lis
ar-ven′-sis
ar-ver-nen′-se
Ar-vic′-ol-a*
ar-vi′-na
Ar-yt-e′-ra
Arz′-æ
As-af-œt′-id-a
A-sag-ræ′-a
As′-aph-ēs
as-ar-if-ol′-ĭ-um
As-ar-i′-na
as′-ar-ŏ-i′-dēs
As′-ar-um
as-cal-o′-nic-um
As-car-ic′-id-a*
as-cen′-dens
As′-cĭ-um
As-cle′-pĭ-ad-a′-cĕ-æ
as-cle′-pĭ-ad′-ĕ-a
As-cle′-pĭ-ad′-ĕ-æ
As-cle′-pĭ-as
As-coch-y′-ta
As-com-yc-e′-tēs*
as-cot-en′-sis
As′-cyr-um
As′-cyr-on
as-el′-lif-or′-mis

Words derived from Latin and Greek (*i.e.*, **all** except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in *psā′-lmist*; ĕ as in *slĕn′-der*; ē as in *vē′-ined*; ĭ as in *thĭn*; ī as in *mach-ī′-nist*; ŏ as in *rŏt′-ten*; ō as in *vō′-ter*; ŭ as in *pow′-er-fŭl*; ū as in *rū′-ler*; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

as-el′-lus
As-er-i′-na
Ash-bur-to′-nĭ-æ
a-si-a′-tic-a
As-im′-in-a
As-o′-ca
as-pal′-ath-ŏ-i′-dēs
As-pal′-ath-us
as-par′-ag-if-ol′-ĭ-a
as-par-ag-ŏ-i′-dēs
As-par′-ag-us
As-pa′-sĭ-a
As-peg-re′-nĭ-a
as′-per-a
as-per-a′-ta
as-per-ic-au′-lis
as-per-if-ol′-ĭ-i
as-per′-rim-us
as-per′-sum
As-per′-u-la
As-phod-el-i′-ne
as-phod-el-ŏ-i′-dēs
As-phod′-el-us*
as-pid-ĭ-ŏ-i′-dēs
As-pid-ĭ-o′-tus
As-pid-is′-tra
As-pid′-ĭ-um
as-ple′-nif-ol′-ĭ-a
as-ple′-nĭ-ŏ-i′-dēs
As-ple′-nĭ-um
As-saf-œ′-tid-a
as-sam′-ic-a
as-sim′-il-e
As-so′-nĭ-a
as-sur′-gens
As-tart′-ĕ-a
As-tel′-ma
As-teph′-an-us
As′-tēr*
As-ter-ac-anth′-a
As-ter-a′-cĕ-æ
As-ter-anth′-em-um
As-ter-is′-cus
As-ter-oc-eph′-al-us
as-ter-ŏ-i′-des
As-ter-o′-ma
As-ter-op′-ter-us
As-ter-os-tig′-ma
asth-mat′-ic-a
As-til′-be
as-til-bŏ-i′-dēs
As-trag′-al′-us
As-tran′-tĭ-a
As-trap-æ′-a
As-troc-ar′-ŷ-um*
As-trol-ob′-ĭ-um*
As-trol-o′-ma
As-troph′-yt-um*
As-ys-ta′-sĭ-a
At-ac′-cĭ-a
At-al-an′-ta
At-al-anth′-us
At-al-an′-tĭ-a
At-am-as′-co
a′-ter
Ath-a′-lĭ-a
Ath-al′-mus
Ath-am-an′-ta
ath-am-an′-tic-um
Ath-an-as′-ĭ-a
Ath-er-os-per′-ma
Ath-er-os-per′-mĕ-æ
Ath-e-ru′-rus*
Ath-lĭ-anth′-us
Ath′-ŏ-us
Ath-rix′-ĭ-a
Ath-rot-ax′-is
ath-rox-ŏ-i′-dēs
Ath-ruph-yl′-lum
Ath-yr′-ĭ-um
At′-kin-si
At-kin′-sĭ-i
At-kin-so′-ni
At-kin-so′-nĭ-a′-na
at-lan′-tic-um
At-oc′-ĭ-on
At-om-a′-rĭ-a
a′-tra
At-rag′-en-e
a-tra′-ta
At′-rip-lex
at-rip-lic′-if-ol′-ĭ-um
at-rip′-lic-is
At′-rop-a
At′-rop-os
a′-tro-pur-pur′-ĕ-a
a′-tro-rub′-ens
a′-tro-san-guin′-ĕ-a
a′-tro-vir′-ens
At-tal-e′-a
at-ten-ŭ-a′-ta
at-ten-ŭ-if-ol′-ĭ-um
at′-tic-a
Au-be′-ri
Au-ble′-tĭ-a
Au-ble′-tĭ-i
Au-brĭ-e′-tĭ-a
Au-che′-ri
Au-che′-rĭ-a′-na
Auck-land′-ĭ-i
*Au′-cub-a**
au′-cub-æ-fol′-ĭ-um
au′-cub-if-ol′-ĭ-a
Au-cup-a′-rĭ-a
Au-dib-ēr′-tĭ-a
Au-dou-in′-ĭ-a
Aug′-ĕ-a
au′-gus-ta
au-gus-ta′-ta
au-gus-tif-ol′-ĭ-um
Au-gus-ti′-na
au-gus-tis′-sim-um
Au′-lac-oph-yl′-lum
Au-lac-os-per′-mum
Au′-lax
au′-lic-a
aur-an′-tĭ-a
Aur-an-tĭ-a′-cĕ-æ
aur-an′-tĭ-ac-um
aur-ant-ĭ-a′-rĭ-a
au-ra′-rĭ-um
aur-a′-ta
au′-rĕ-a
Au-re′-lĭ-a
Au-re-lĭ-a′-na
au′-rĕ-o-fla′-vum
au′-rĕ-ol-a
aur-ic′-om-us
Aur-ic′-ul-a
aur-ic′-ul-æ-fol′-ĭ-a
aur-ic-ul-a′-rĭ-a
aur-ic-ul-a′-ta
aur-if′-lŭ-a
aur-if-or′-mis
au-ri′-ta
au-ro′-sum
Au-stin-ĭ-a′-na
aus-tra-las′-ic-um
aus-tra′-lĕ
aus-tra′-lĭ-a′-na
aus-tra′-lis
aus′-trĭ-ac-a
aus′-tro-cal-e-don′-ic-a
au-tum-na′-le
Av-el-la′-na
Av-e′-na
av-e-na′-cĕ-um
Av-er-rho′-a
av′-ic-eps
av-ic-ul-a′-re
av′-ĭ-um
Ax-il-la′-rĭ-a
ax-il-la′-ris
ax-il-lif-lo′-ra
Az-ad-ir-ach′-ta
Az-al′-ĕ-a*
az-al-ĕ-ŏ-i′-dēs
Az-a′-ra
Az-a′-rol-us
Az-ed′-ar-ach
Az-i′-ma
Az-ol′-la
az-or′-ic-a
az-u′-rĕ-us

Bab-ĭ-a′-na
Bab-ing-to′-nĭ-a
bab-or-en′-sis
bab-yl-o′-nic-a
ba-ca′-ba
bac′-cans
bac-ca′-tum
bac-char-if-ol′-ĭ-us
Bac′-char-is
Bac′-chus
bac-cif′-er-a
Bac-cil′-lus
Bach-em-ĭ-a′-na
bac-il-la′-ris
Back-hous′-ĕ-i
Back-hous′-ĭ-a
Back-hous′-ĭ-a′-na
Bac-o′-nĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined: ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter: ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ouse*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Bac-te′-rĭ-um
Bac′-tris
Bac-ul-a′-rĭ-a
bac-ul-if′-er-a
Bad-am′-ĕ-a
Bæ′-a
Bæck′-ĕ-a
Bæ-ob-ot′-rys
Ba-er′-ĭ-a
bæt′-ic-a
Bah-i′-a
bah-i-en′-
Bah′-ma
Baik-ie′-i
Bail-lo′-ni
Baines′-ĭ-i
Bain′-ĭ-i
Ba′-ker-i
Ba-ker-ĭ-a′-na
Bal-ang′-has
Bal-an′-in-us
Bal-an-i′-tēs
Bal-an′-ĭ-us
Bal-an-op′-ter-is
Bal-an′-sæ
Bal-an′-tĭ-um
Bal-bi′-sĭ-a
Bal-bi′-sĭ-a′-na
Bal-bi′-sĭ-i
bal-den′-sis
Bal-der′-ĭ-am-æ
Bal-der′-ram-æ
Bal-ding-e′-ra
bal-ĕ-a′-ric-a
Bal-four′-ĭ-a
Bal-four-ĭ-a′-na
Bal-four′-ĭ-i
bal-ka′-na
Bal-lan-ti′-nĕ-i
Bal-lo′-ta
Bal-mor-ĭ-a′-na
bal-sam′-ĕ-a
bal-sam-if′-er-a
Bal-sam′-ĭ-i
Bal-sam′-in-a
bal-sam′-in-æ-flo′-ra
Bal-sam-in′-ĕ-æ
Bal-sam′-it-a
Bal-sam′-od-end′-ron
Bal′-sam-um
bal′-tic-a
Bam-bu′-sa
bam-bu′-sæ-fol′-ĭ-a
bam-bu-sŏ-i′dēs
Ban-a′-ra
ban-at′-ic-us
Ban-crof′-tĭ-i
Ban-dhu′-ca
Ban-is-te′-ri
Ban-is-te′-rĭ-æ
Bank′-sĭ-a
Bank′-sĭ-æ
Bank-sĭ-a′-na
Bank-sĭ-an′-æ
Bank′-sĭ-i

Baph′-ĭ-a
baph-ic-an′-tum
Bap-tis′-ĭ-a
Bap-tis′-tĭ-i
Bar-aq-ui-a′-na
Bar-aq-uin′-ĭ-i
Bar-bac-e′-nĭ-a
bar-bad-en′-sis
Bar′-bă-Jov′-is
bar′-bar-a
Bar-bar-e′-a
bar-ba′-ta
bar-ba′-tul-ūm
Bar′-ber-æ
Bar-ber′-ĭ-æ
Bar′-ber-ĭ-a-num
Bar-bi-e′-rĭ-a
bar-big′-e-ra
bar-bul-a′-ta
bar-cin-o′-nen-sis
Bar-clay-a′-na
Bar-id′-ĭ-us
Bar-il-le′-ti
Bar-ker′-i
Bar-ker′-ĭ-a
Bar-ker-ĭ-a′-na
Bark-haus′-ĭ-a
Bar′-kly-a
Bar′-kly-i
Bar′-læ
Bar-læ-a′-na
Bar-le′-rĭ-a
bar-le′-rĭ-ŏ-i′-dēs
Bar′-lĭ-a
Bar-nad-e′-sĭ-a
Bar-nard′-ĭ-a
Bar-ne′-sĭ-i
Bar′-om-etz
Bar-os′-ma
Bar-rald-ei′-a
Bar-rel-li-e′-ri
Bar-rel′-lĭ-i
Barr′-ĭ-i
Bar-ring-to′-nĭ-a
Bar-ring-to′-nĭ-æ
Bar-rot′-ĭ-a
Bar′-ter-i
Bar-the-rĭ-a′-na
Bart-lin′-gĭ-a
Bar-tol-i′-na
Bar-to′-nĭ-a
bar-to-nĭ-ŏ-i′-dēs
Bar′-ў-a
Bar-ў-an′-dra
Bar-ў-os′-ma
bar-yst′-ach-ys
Bas-el′-la
Bas-el-la′-cĕ-æ
bas-il-a′-ris
Bas-il′-ic-um
Bas′-sĭ-a
Bas′-sĭ-i
Bas-so′-vĭ-a
Bat-a′-tas
Bat-au′-a

Bate-man-ĭ-a′-num
Bate-man′-ni
Bate-man′-nĭ-a
Bat-o′-nē-us
Batsch′-ĭ-a
Bau-dou-in′-ĭ-i
Bau-e′-ra
Bau-e′-ri
Bau-e-rĭ-a′-na
Bau-hin′-ĭ-a
Baus′-ĕ-i
bav-ar′-ic-a
Bax-ter′-i
Bay-field′-ĭ-i
Bay′-lĭ-æ
Bear-ley-a′-na
Bea-to′-nĭ-a
Bea-to′-nĭ-i
Beat-so′-nĭ-a
Beau-car′-nĕ-a
Beau-for′-tĭ-a
Beau-har-noi′-sĭ-a
Beau-mon′-tĭ-a
Beau-mon-tĭ-a′-na
Beau-mon′-tĭ-i
Bec-cab-un′-ga
Bec-ca′-rĭ-i
Be′-cĭ-um
Bed-do′-mĕ-i
Bed-for′-dĭ-a
Bed-for-dĭ-a′-na
Bed-ing-hau′-sĭ-i
Bef-a′-ri-a
Beg-a′-ni-a
Beg-o′-ni-a′-cĕ-æ
beg-o′-nĭ-æ-fol′-ĭ-a
Beg-o′-nĭ-el′-la
Beij-er-inck′-ĭ-i
Bej-a′-rĭ-a
Bel-am-can′-da
Bel-an′-ger-i
Bel-e′-nĭ-a
belg′-i-i
bel′-la
Bel-lad-on′-na
Bel-lar′-di-a
Bel-len-de′-ni
Bel-ler-a′-li-a
Bel-lerm′-ĕ-i
Bel-lid-i-as′-trum
bel-lid-if-lo′-rus
bel-lid-if-ol′-ĭ-um
bel-lid-ĭ-ŏ-i′-dēs
Bel-li′-nĭ-a
bel-li′-num
Bel′-lis
Bel′-lĭ-um
bel′-lul-a
bel′-lum
Bel-mo-re′-a′-na
Bel-on-i′-tēs
Bel-op-er′-on-e*
bel-oph′-or-us
bel-oph-yl′-lum
Bel-at′-ti-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in pā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Bel-va′-la
Bel-vi′-sĭ-a
bem-be′-cif-or′-mis
Ben-a′-rў-i
Ben-eb′-er-a
ben-ed-ic′-tus
ben-gha-len′-sis
ben-jam-i′-na
Ben-net′-ĭ-a
Ben-net′-tĭ-i
Ben-so′-næ
Ben-so′-ni
Ben-so′-nĭ-æ
Ben′-tham-i
Ben-tham′-ì-a
Ben-tham-ĭ-a′-na
Ben-tinck′-ĭ-a
Ben-zo′-in
Ber-ār′-di
Ber-ār′-dĭ-a
Ber-ber-id-a′-cĕ-æ
Ber-ber′-id-is
Ber-ber-id-op′-sis
ber-ber-if-ol′-ĭ-a
Ber′-ber-is
Ber-chem′-ĭ-a
Berg-e′-ra
Berg-ĭ-a′-na
Berg-man-nĭ-a′-na
Berk-eley′-i
Berk-hey′-a
Berk-ley′-i
Ber-land′-ĭ-e-rĭ-a′-na
ber-mu′-dĭ-a′-na
Ber-nār′-di
Ber-nar-dĭ-a′-na
Ber-nay′-sĭ-i
Bern-hard-ĭ-a′-num
Ber-nĭ-e′-rĭ-a′-na
Ber-ter-o-a′-na
Ber-thel-o′-ti
Ber-thel-o-tĭ-a′-nus
Ber-thol-le′-tĭ-a
Ber-ti′-ni
Ber-tol-o′-nĭ-a
Ber-tol-o′-nĭ-i
Ber-ze′-lĭ-a
Bes-chor-ne′-rĭ-a
Bes-le′-rĭ-a
bes-sar-ab′-ic-us
Bes-se′-ra
Bes-se′-rĭ-a′-na
Bes-so′-ni
Bes-so′-nĭ-a′-na
Be′-ta
be-ta′-cĕ-um
be′-tæ
Bet′-ckĕ-a
Beth-el′-lĭ-i
Beth-u′-nĕ-a′-num
Be′-tle
Bet-on′-ic-a
bet-on′-ic-æ-fol′-ĭ-a
bet-on-ic-ŏ-i′-dēs
Bett-zich-ĭ-a′-na
Bet′-ul-a
bet′-ul-æ-fol′-ĭ-a
Bet-ul-e′-æ
Bet-ul-e′-ti
bet-ul-if-ol′-ĭ-a
bet-ul-i′-na
bet-ul-ŏ-i′-dēs
Bet′-ul-us
Beu′-thĭ-i
Bey-rich-ĭ-a′-num
Bey-rich′-ĭ-i
Bhoj-pat′-tra
Bi-an′-cĕ-a
bi-ar-tic-ul-a′-tum
Bi-a′-rum
Bi-as-sol-et-tĭ-a′-na
bi-au-ri′-ta
bib-rac-tĕ-a′-ta
bic-al-ca-ra′-ta
bic-al-lo′-sum
bic-am-er-a′-tum
bic-ar-i-na′-ta
bic′-ol-or
bic-on-tor′-tus
bic-or′-nis
bic-or-nu′-tum
Bic-or-o′-na
bic-re-na′-tus
Bic-ton-en′-sis
bic-us′-pis
Bid′-ens
bid-en-ta′-tus
bid-en-tif-ol′-ĭ-a
Bid-w-l′-lĭ-æ
Bid-wil′-li
Bie-ber-stei′-nĭ-a
Bie-ber-stei′-nĭ-a′-num
Bie-ber-stei′-nĭ-i
bĭ-en′-nis
bif′-er-um
bif′-id-a
bif-lo′-ra
bif-ol′-ĭ-um
bif-or′-mĕ
Bif-re′-na-rĭ-a
bif′-rons
bif-ur-ca′-tum
Big-ar-el′-la
Big-el-o′-vĭ-a
big-ib′-bum
Big-lan-dul-a′-rĭ-a
big-lu′-mis
Big-no′-nĭ-a
Big-no-nĭ-a′-cĕ-æ
big-no-nĭ-ŏ-i′-dēs
Bi′-hai
Bi-hor-el′-la
bij′-ug-a
bil-a′-mel-la′-ta
Bil-im′-bi
Bil-lār-dĭ-e′-ra
Bil-lār-dĭ-e′-ri
Bill-ber′-gĭ-a
Bill-ber′-gĭ-æ
bil′-ob-um
bim-ac-ul-a′-tus
bin-a′-ta
bin-er′-vis
bin-oc-ul-a′-re
Bĭ-oph-yt′-um
Bĭ-orh-i′-za
Bĭ′-ot-a*
Bi-o′-tĭ-a
bip-ar-ti′-ta
bip-et′-al-a
bip-in-na′-ta
bip-in-na-tif′-id-um
bip-in-na′-tip-ar-ti′-tum
bip-unc-ta′-ta
Bir′-chĕ-a
Bir-schel′-lĭ-i
Bis-cu-tel′-la
bis-ec′-tum
bis-er-ra′-ta
bis-pi′-no-sa
Bis-tor′-ta
bit-er-na′-ta
bi-thy′-nic-a
bit-u′-min-o′-sa
biv-al′-vĕ
biv-it-ta′-tus
Biv-o′-næ
Biv-o-næ′-a
Bix′-a
Bix-in′-ĕ-æ
Black-bur′-nĭ-a
Black-bur-nĭ-a′-na
Blæ′-rĭ-a
Blag-ay-a′-na
Bla′-kĕ-a
Blan-co′-i
Bland-for′-dĭ-a
bland-for′-dĭ-æ-flo′-rum
blan′-dum
Blan-quær′-ti
Blat′-ta
Blat-ta′-rĭ-a
Ble-chĭ-a′-na
blēch-nif-ol′-ĭ-a
blēch-nŏ-i′-des
Blēch′-num
Ble′-chum
Blee-ke′-rĭ-a
Blen-noc-am′-pa
Ble′-o
bleph-ar-ig-lōt′-tis*
Bleph′-ar-is
bleph-ar-oph-yl′-la
Bleph-il′-ĭ-a
Blet′-ĭ-a
Bligh′-ĭ-a
Bloo-mer-ĭ-a′-num
Blou-do′-vĭ-i
Blox′-am-i
Blu′-mĕ-a′-num
Blu′-mĕ-i
Blu-men-a′-vĭ-a
Blu-men-bach′-ĭ-a
Blu′-mĭ-a
Blunt′-ĭ-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Bo-a′-rĭ-a
Bo-bār′-tĭ-a
Boc-co′-ni
Boc-co′-nĭ-a
Bœ′-ber-a
Bœh-me′-ri
Bœh-me′-rĭ-a
Bœn′-ning-hau-se′-nĭ-a
boer-haav′-ĭ-æ-fol′-ĭ-a
Bo-er-haav′-ĭ-i
bog-o′-ten-se
bo-he′-mic-um
Bois-sĭ-e′-ri
Bois-sĭ-e-rĭ-a′-na
Bois sœ′-a
Boi-vi′-ni
Bo′-je-ri
Bo-je-rĭ-a′-na
Bol-an-de′-ri
Bol-boph-yl′-lum
Bol′-dĕ-a
Bol′-dus
Bo-le′-tus
Bol′-ĕ-um
bol-iv-ĭ-a′-na
bol-iv-ĭ-en′-sis
Bol-lan′-dĭ-æ
Bol′-lĕ-a
Bol-lĕ-a′-na
Boll-wyll-er-ĭ-a′-na
Bol-to′-nĭ-a
Bol-u′-sĭ-i
Bom-a′-rĕ-a
Bom-ba′-cĕ-æ
Bom′-bax
bom-bil-if′-er-a
Bom′-bus
Bom-byc′-id-æ
Bom-byc-i′-na
Bom′-byx
bon′-a
Bon′-a-Nox′
Bo-nap-ār′-tĕ-a
bon-a′-rĭ-en′-sis
Bon-ar-o′-ta
Bo-nar-ot-ĭ-a′-na
Bon-a′-tĕ-a
Bon-av-e′-rĭ-a
Bon-du-el′-li
Bon-gār′-dĭ-a
Bon-jean′-ĭ-a
Bon-nay′-a
Bon-ne′-tĭ-a
Bon-plan-dĭ-a′-na
Bon-plan′-dĭ-i
Boo-thĭ-a′-na
Boo′-thĭ-i
Bor-a-gin-a′-cĕ-æ
Bor-a-gin′-ĕ-æ
Bor-a′-go
Bor-as′-sus
Bor-bo′-nĭ-a
bor-bo′-nic-a
bor-ĕ-a′-lis
Bork-hau-se′-nĭ-a
bor-ne-en′-se
Bor-o′-nĭ-a
Bor-rag-in-ŏ-i′-dēs
Bor-re′-rĭ-a
Bor-re-rĭ-a′-na
Bor-skĭ-a′-na
Borsz-czo′-wi
Bo-rў-a′-num
Bo′-rў-i
Bos′-chĭ-a′-nus
Bos′-cĭ-a
Bos-sel-ar′-i
Bos-sĭ-æ′-a
Bos′-trich-us
bos-trych-o′-dēs
Bos-wel′-lĭ-a
Both-wich-ĭ-a′-num
bot-ra′-na
Bot-rў-anth′-us
Bot-rў-ap′-ĭ-um
Bot-rych′-ĭ-um
Bot-rў-od-en′-dron
bot-rў-ŏ-i′-dēs
bot-rў-oph′-or-a
Bot′-rys
bot-ry′-tis
Bot-ter′-ĭ-i
Bot-tĭ-o′-nĕ-a
Bou-cer-o′-sĭ-a
Bou-che′-a
Bou-che-a′-num
Bou-gain-vil′-lĕ-a
Bou-gain-vil′-lĕ-i
Bou-gue′-rĭ-a
Bour-gæ′-i
Bour-ga′-ti
Bour-sĭ-e′-ri
Bous-sin-gaul′-tĭ-a
Bou-tign-ў-a′-num
Bou-vār′-dĭ-a
Bo-vĕ-a′-na
Bow-e′-nĭ-a
Bow-ie′-a
Bow-ie-a′-na
Bow-ie′-i
Bow-ker′-i
Bow′-man-i
Bow-man′-ni
Bow-ring-ĭ-a′-na
Box-al′-lĭ-i
Boy′-lĕ-i
Brab-ei′-um
brac-am-o-ren′-sis
Brach-el-yt′-ra
brach-ĭ-a′-ta
Brach-ў-ach-i′-ris
brach-ў-an′-drum
brach-ў-an-the′-rum
brach-ў-arth′-ra
brach-yb-ot′-rў-a
brach-yb′-ot-rys
brach-yc-au′-los
brach-yc′-er-as
Brach-ych-i′-tōn*
Brach-yc′-om-e
brach-yc-us′-pis
Brach-yl-æ′-na
Brach-yl-o′-ma
brach-yn-e′-ma
brach′-ў-od-on
Brach-ў-o′-tum
brach-yp-et′-al-um
brach-yp[illegible]l′-la
brach-y[illegible]-a
brach-yp[illegible]ter-a
brach-yp′-us
Brach-yrh-yn′-chos
Brach-y′-ris
Brach-ys-e′-ma*
brach-ys-ep′-al-us
Brach-ys′-path-a*
Brach-ys-tel′-ma
brach-ys-te′-mŏn
Brack-en-ridg′-ĕ-i
Bra-con′-id-æ
brac-tĕ-a′-ta
Brac-tĕ-a′-tæ
brac-tĕ-ol-a′-tus
brac-tĕ-o′-sa
brac-tes′-cens
Brad-bu-rĭ-a′-na
Brad-bu′-rĭ-i
Brad-lei′-a
Bra′-hĕ-a
Brai′-nĕ-a
Bran-de′-gĕ-i
bras-il-ĭ-a′-na
bras-il-ĭ-en′-sis
Bras-sa′-vo-la
Bras-sa′-vol-æ
Bras′-sĭ-a
Bras′-sic-a
Bras-sic-a′-cĕ-æ
bras′-sic-æ
bras-sic-æ-fol′-ĭ-a
Bras′-sĭ-i
Brau′-nĭ-i
bra′-va
Bra-vo′-a
Bray′-a
braz-il-ĭ-a′-na
braz-il-ĭ-en′-sis
Bre′-da
Bre′-dĭ-a
Breh′-mĭ-a
brev-ĭ-ar-is-ta′-ta
brev-ic-au′-lis
brev-if-lo′-rum
brev-if-ol′-ĭ-a
brev′-if-rons
brev-il-a′-min-a′-tum
brev′-ip-ēs
brev-ir-ost′-ris
brev-is-ca′-pa*
brev-is-e′-ta*
brev-is-o′-rum
brev-is-path′-a
Brev-oor′-tĭ-a
Brew-er′-ĭ-i
Brey-nĭ-a′-na

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in *psā′-lmist*; ĕ as in *slĕn′-der*; ē as in *vē′-ined*; ĭ as in *thĭn*; ī as in *mach-ī′-nist*; ŏ as in *rŏt′-ten*; ō as in *vō′-ter*; ŭ as in *pow′-er-fŭl*; ū as in *rū′-ler*; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Brex′-ĭ-a
Brex-ĭ-a′-cĕ-æ
Bridg-e′-sĭ-i
Bridg-man′-ni
brig-an′-tĭ-ac-a
Brigg′-sĭ-i
Brig-no′-lĭ-a
Bril-lan-tai′-sĭ-a
bril-lĭ-an-tis′-sim-um
Bri′-za
bri-zæ-for′-mis
Broc′-chĭ-a
Brockle-hurst-ĭ-a′-na
Bro-di-æ′-a
Brom-el′-ĭ-a
Brom-el-ĭ-a′-cĕ-æ
brom-el-ĭ-æ-fol′-ĭ-a
Brom-head′-ĭ-a
Brom′-us*
bron-chĭ-a′-lis
Brong-nĭ-ār′-tĭ
Brong-nĭ-ār′-tĭ-a
Broo-kĕ-a′-num
Broo′-kĭ-i
Bro′-sim-um
Brot′-er-a
Brough-to′-nĭ-a
Brous-son-e′-tĭ-a
Brous-son-e′-tĭ-i
Brow-al′-lĭ-a
Brown′-ĕ-a
Brown′-ĕ-i
Brown′-ĭ-i
Brown-low′-ĭ-a
Bru-an′-tĭ-i
Bru′-cĕ-a
Bru′-chid-æ
Bru′-chus
Bruck-mül′-ler-i
Brug-man′-sĭ-a
Bru-ins-man′-ĭ-a
bru-ma′-le
bru-ma′-ta
Bru-nel′-la
Brun-fel′-sĭ-a
Brun-fel′-sĭ-i
Bru′-nĭ-a
Bru-nĭ-a′-cĕ-æ
bru-ni′-ad-ēs
bru-nĭ-if-ol′-ĭ-a
Brun-lee-sĭ-a′-num
brun′-nè-a
Brun-now′-ì-i
Bru-no′-nì-a
Bru-no′-nì-a′-na
Bru-no′-ní-i
Bru-no′-nis
Bruns-vig′-ĭ-a
bru′-tĭ-a
Brў′-a*
Brў-anth′-us
Bry-mer-ĭ-a′-na
brў-ŏ-ĭ′-dēs
brў-ol-oph′-yt-um
Brў-o′-nĭ-a
brў-o′-nĭ-æ-fol′-ĭ-us
Brў-o-nop′-sis
Brў-oph-yl′-lum
bu-bal-i′-na
Bu-ba′-nĭ-a
Bu-ba′-nĭ-i
Bu′-bōn
Bu-bro′-ma
buc-cin-a′-tor
Buc′-co
buc-co′-sum
bu-ceph′-al-a
Bu-ceph′-al-on
Bu′-cer-as
Bu-chan-a′-ni
Bu′-cid-a
Buck-lan′-dĭ-a
Budd-lei′-a
budd-lei-ŏ-ĭ′-dēs
Buer′-ger-i
Buett-ne′-rĭ-a
Buett-ne′-rĭ-ĕ-æ
Bu′-fo
bu-fo′-nĭ-a
bu-fo′-nis
Bu-glōs′-sum*
bu-gul-if-ol′-ĭ-a
bul-bif′-er-a
Bul-bi′-ne
Bul-bi-nel′-la
bul-boc-o′-dĭ-ŏ-ĭ′-dēs
Bul-boc-o′-dĭ-um
Bul-boph-yl′-lum
bul-bo′-sa
Bul-bos-per′-mum
Bul-bos′-tyl-is*
bul-la′-ta
Bul-len-i-a′-nus
Bul-len′-ĭ-i
Bul-ler-ĭ-a′-num
Bul-li-ār′-da
bul-lul-a′-ta
Bu-low′-ĭ-a
Bu-mal′-di
Bun-cho′-sĭ-a
Bun-gĕ-a′-na
Bun′-ge-i
Bu-ol-i-a′-na
Bu-o-nap-ār′-tĕ-a
Bu′-phan-e
būph-thal-mŏ-ĭ′-dēs
Būph-thal′-mum
Bu-pleu′-rum
Bur-bid′-gĕ-a
Bur-bid′-gĕ-i
Bur-char′-dĭ-a
Bur-chel′-li
Bur-chel′-lĭ-a
Bur-chel′-lĭ-i
bur-for-dĭ-en′-sis
Bur-ger-ĭ-a′-na
Bur-ges′-sĭ-æ
*Burgs-dorf-f*ĭ-a
Bur′-kĕ-i
Bur-ling-to′-nĭ-a
Bur-man′-ni
Bur-na′-ti
Bur-sa′-rĭ-a
Bur′-ser-a
Bur-ser-a′-cĕ-æ
Bur′-ser-i
Bur-ser-ĭ-a′-na
Bur′-tĭ-i
Bur-to′-nĭ-a
Bur-to′-nĭ-i
Bus-beck′-ĕ-a
Bus-chĭ-a′-num
Bu′-tĕ-a
Bu-tom-a′-cĕ-æ
Bu′-tom-us*
but-yr-a′-cĕ-a
Bux-bau′-mĭ-a
Bux-bau′-mĭ-i
Bux′-i
bux-if-ol′-ĭ-a
Bux′-us
Byr-son′-im-a
Bys-trop-o′-gōn
Byt-u′-rus
byz-an-ti′-num

Ca-ap-e′-ba
Cab-al-le′-rĭ-a
Cab-om′-ba
Cab-om′-bĕ-æ
Cac-a′-lĭ-a
cac-a′-li-æ-fol′-ĭ-a
Cac-a′-o
Cac-a′-ra
Cac-ow′-cĭ-a
Cac′-tĕ-æ
Cac-to -rum
Cac′-tus
Cad-am′-ba
Cæn-op′-ter-is
Ca-en′-wood-ĭ-a′-na
Cæ-o′-ma
cær-ul′-ĕ-a
cær-ul-es′-cens
Cæs-al-pi′-nĭ-a
Cæs-al-pi′-nĭ-ĕ-æ
cæ′-sĭ-us
cæs-pit-o′-sum
caf′-fra
caf-fro′-rum
Cai-ni′-to
Cai-oph′-or-a
ca′-ja
ca-ja′-nif-ol′-ĭ-a
Ca-ja′-nus
Ca-ki′-le
Cal-a′-ba
cal-ab′-ric-a
Cal-ab-u′-ra
Cal-ad-e′-nĭ-a
Cal-a′-dĭ-um
Cal′-a-is
Cal-am-ag-ro′-stis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ow* in h*ouse*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Cal-am′-ĕ-æ
Cal-am-in′-tha
cal-am-it-o′-sum
Cal-am-os-*a′-gus*
Cal-am′-pe-lis
Cal′-am-us
Cal-an′-chŏ-e
Cal-an-dri′-nĭ-a
Cal-an′-the
cal-an′-thum
Cal-ath-e′-a
cal-ath-i′-num
cal-ca-ra′-ta
Cal-cĕ-ol-a′-rĭ-ĕ-æ
Cal-cĕ-ol-a′-rĭ-a
Cal-ce′-ol-us
Cal-cit′-ra-pa
Cal-da′-sĭ-a
Cal-da-sĭ-a′-na
Cald-clu′-vĭ-a
Cal′-ĕ-a*
Ca-le-a′-na*
Cal-ec-ta′-sĭ-a
Cal-en′-du-la
cal-en′-dul-a′-cĕ-um
Ca′-ley-i
cal-if-or′-nic-us
Ca-li′-nĕ-a
Cal-iph-ru′-rĭ-a*
Ca-lis-ay′-a
Cal′-la
cal-læ-fol′-ĭ-um
Cal-le′-rĭ-i
Cal-lĭ-*an-as′-sa*
Cal-lĭ-an′-dra
cal-lib-ot′-rў-on
Cal-lic-ar′-pa
Cal-lich′-rŏ-a*
Cal-lic′-om-a
Cal-lic-or′-nĭ-a
Cal-lic-ys′-thus
Cal-lig-lōs′-sa
Cal-lig′-on-um
Cal-lim-or′-pha
cal-li-op-sid′-ĕ-a
Cal-lĭ-op′-sis
Cal-lip-ro′-ra*
Cal-lip-sy′-che*
Cal-lip′-ter-is
Cal-lirh′-ŏ-e
Cal-lis′-tach-ys
Cal-lis-tem′-ma*
Cal-lis-te′-mōn*
Cal-lis′-teph-us
cal-lis-tog-lōs′-sa
Cal-lith-au′-ma
cal-lit′-rich-a
Cal-lit′-ris
Cal-lix′-en-e
cal-lo′-sum
Cal-lu′-na
Cal-ob-ot′-rў-a
Cal-och-i′-lus
Cal-och-or′-tus
cal-oc′-om-a
Cal-od-en′-dron
cal-od-ic′-tў-on*
Cal-od′-rac-on*
cal-og-lōs′-sa
Cal-og′-yn-e
cal-om-el′-an-os
Cal-om-er′-ĭ-a
Cal-on-yc′-tĭ-on
Cal-oph′-ac-a*
Cal-oph′-an-ēs
Cal-oph-yl′-lum
cal-op-lec′-tron
Cal-op-o′-gōn
cal-op-ter′-um
Cal-os-anth′-ēs
Cal-os-cor′-dum
Cal-os-tem′-ma
Cal-oth′-am-nus
cal-oth′-rix
Cal-o′-tis
Cal-ot′-rop-is
Cal-pic-ar′-pum
Cal-pid′-ĭ-a
Cal′-tha
Cal-um′-ba
cal-u′-ra
Cal-vert′-ĭ-a′-na
cal-ves′-cens
Cal-vŏ-a′-na
Cal-yc-anth-a′-cĕ-æ
Cal-yc-anth′-us
Cal-yc-if-lo′-ræ
cal-yc′-in-a
Cal-yc′-ĭ-um
Cal-yc-oph-yl′-lum
cal-yc-o′-sa
Cal-yc-os-tem′-ma
Cal-yc-ot′-om-e*
cal-yc-ot′-rich-a
cal-yc-ul-a′-ta
Cal-yd-er′-mos
Cal-ym-e′-nĭ-a
Cal-ym′-mod-on
Cal-yp-lec′-tus
Cal-yp′-so
Cal-yp-tran′-thēs
Cal-yp-tra′-rĭ-a
cal-yp-tra′-ta
Cal-yp′-trĭ-on
Cal-yp-troc′-al-yx*
Cal-yp-trog′-yn-e
Cal-yp-tron′-om-a*
Cal-ys-ac′-cĭ-on
Cal-ys-teg′-ĭ-a*
Cal-yth′-rix
cal-yt′-rich-a
Cal-yx′-hy-men′-ĭ-a*
Ca′-mār-a
Cam-ar-id′-ĭ-um
Cam-ar-o′-tis
Cam-as′-sĭ-a
Cam-bes-se-de′-sĭ-a
Cam-bo′-gĭ-a
cam′-bri-ca
Cam-brid-gĕ-a′-num
Cam-el′-lĭ-a*
Cam-el′-lĭ-æ
cam-el′-lĭ-æ-flo′-rum
cam-el′-lĭ-æ-fol′-ĭ-a
cam-e-lo′-rum*
Cam-er-o′-ni
Cam-er-oo-nĭ-a′-num
Cam-er-to′-ni
Cam′-mar-um
Cam-ŏ-en′-sĭ-a
Cam-ol′-lĕ-i
Cam-pa′-nĕ-a
cam-pa′-nif-lo′-ra
Cam-pa′-nul-a
Cam-pa′-nul-a′-cĕ-æ
cam-pa′-nul-a′-rĭ-a
cam-pa′-nul-a′-ta
cam-pa′-nul-if-lo′-ra
cam-pa′-nul-ŏ-i′-dēs
Cam-pa-num-æ′-a
Camp-bel′-li
Camp-bel′-lĭ-æ
Camp-bel′-lĭ-i
cam-pe-chĭ-a′-num
cam-pes′-tra
Cam′-phor-a
Cam-phor-as′-mæ
cam-phor-a′-tus
Cam-pos′-ĭ-i
Camp-sid′-ĭ-um
Camp-te′-rĭ-a
Camp-to′-dĭ-um
camp-top-et′-al-a
Camp′-top-us
Camp-tos-o′-rus
camp-yl-ac-an′-tha
Camp-yl-an-the′-ra
Camp-yl′-ĭ-a
Camp-yl-ob′-ot-rys
camp-yl-oc-ar′-pum
Camp-yl-oc-en′-tron
camp-yl-og-lōs′-sa
Camp-yl-on-eur′-on
ca′-na
can-ad-en′-sĕ
Can-a′-la
can-a-lic-ul-a′-ta
can-a′-rĭ-en′-sis
Can-a-ri′-na
can-a-ri-nŏ-i′-dēs
Can-a′-rĭ-um
Can-ar-a′-lĭ-a
Can′-bi-a
Can′-bў-i
can-cel-la′-ta
can-dam-ar′-cen-sis
can-de-la′-brif-or′-mis
Can-de-la′-brum
can′-dens
can′-dic-ans
can′-did-a
can-did-a′-tum
can-did-is′-sim-a
can-did′-ul-um
Can-dol′-lĕ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in **house**; **g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)**

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Can-dol′-lĕ-a′-na
Can-dol′-lĕ-i
Can-el′-la
Can-el-la′-cĕ-æ
can-es′-cens
Can-ic-id′-ĭ-a
can-i′-cul-a′-ris
can-i′-na
Can-i′-næ
Can-is′-trum
Can′-na
can-nab′-in-a
Can-nab-in-a′-cĕ-æ
Can-nab-in′-ĕ-æ
Can′-nab-is
can-nab′-ĭ-um
can-næ-fol′-ĭ-um
can-næ-for′-mĕ
Can-nar′-tĭ-i
Can′-nĕ-æ
Can-no′-ni
Can-sco′-ra
can-tab′-ric-us
Can-ter-bur-ў-a′-na
Can-thar-el′-lus
Can′-thĭ-um
can-ton-ĭ-en′-sis
Can′-tŭ-a
can′-tul-a
ca′-num
ca-pen′-se
Ca′-pĭ-a
cap-il-la′-cĕ-a
cap-il-la′-re
cap-il′-lif-ol′-ĭ-a
Cap-il′-lus-Ven′-er-is
cap-is-tra′-tum
cap-it-el-la′-tum
Cap-no′-dĭ-um
Cap-nor′-chis
Cap-par-id′-ĕ-æ
Cap′-par-is
Cap′-rĕ-a
cap-re-a′-rum
cap-rĕ-ol-a′-ta
Cap-rif-ol-ĭ-a′-cĕ-æ
Cap-rif-ol′-ĭ-um
cap-ri′-na
cap-rĭ-ol-a′-ta
Cap-ro-nĭ-a′-na
Cap-rox′-yl-on*
Cap′-sic-as′-trum
Cap′-sic-um
cap-sul-a′-ris
cap′-ut-gal′-li
Cap′-ut-Med-u′-sæ
Car′-ab-us
Car-ac-al′-la
car-ac′-as-a′-num
car-ac′-as-en′-sis
Car-ag-a′-na
Car-ag-u-a′-ta
Car-al′-lĭ-a
Car-al-lu′-ma
car-am-an′-ic-um
Car-am-bo′-la
Car-an′-das
Car-a′-pa
Car-av-a′-ta
Car-be′-nĭ-a
car-char′-ĭ-as
Car-dam-i′-ne
car-dam-i′-ne-fol′-ĭ-a
Car-dam-i′-nēs
Car-dam-o′-mum
Car-der′-i
Car-dĭ-an′-dra
car-din-a′-lis
car-dĭ-och-læ′-na
car-di-op-et′-al-um
car-di-oph-yl′-lus
car-du-a′-cĕ-a
car-du-if-ol′-ĭ-us
Car-dun-cel′-lus
Car-dun′-cul-us
car-dŭ-ŏ-i′-dēs
Car′-dŭ-us
Ca′-rex
Ca′-rĕy-a
Ca′-rĕy-a′-num
Ca-rib-æ′-um
car-ib-e′-a
Ca′-ri-ca
ca-ric-if-ol′-ĭ-a
ca′-ric-in-um
ca′-ric-is
ca-ric-o′-sus
Car′-ĭ-es
car-ĭ-na′-lis
car-ĭ-na′-tus
car-ĭ-nif′-er-um
car-in′-thĭ-ac-a
Car-ĭ-o′-ni
Car-ĭ-op′-sis
car-ip-en′-sis
Car-is′-sa
ca-ris′-sim-a
Car-li-e′-ri
Car-li′-na
Car-lu-dov′-ic-a
Car-mi-chæ′-lĭ-a
Car-mi-chæ′-lĭ-æ
Car-mĭ-o′-li
car′-nĕ-a
car-nĭ-ol′-ic-a
car-no′-sul-a
car-no′-sum
Car-ol-i′-na
Car-ol-i′-næ
Car-ol-i′-nĕ-a
car-ol-i′-nĕ-æ-fol′-ĭ-a
car-ol-i-nen′-sis
car-ol-i-nĭ-a′-na
car-ol-i′-nus
Car-o′-ta
car-path′-ic-a
Car-pen-te′-rĭ-a
car-pi′-nif-ol′-ĭ-a
Car-pi′-nus*
Car-poc-ap′-sa
Car-pod-i′-nus
Car-pod-on′-tos
Car-pol-y′-sa
Car-pop-o′-gōn
Car-te′-sĭ-a
car-tha-gin-en′-se
Cār′-tham-us
Car-thu-sĭ-a-no′-rum
car-til-a-gin′-ĕ-um
Car-to′-ni
Cart-wright-ĭ-a′-nus
car-ŭ-if-ol′-i-um
Ca′-rum
Ca-rum′-bĭ-um
Car-un-cul-a′-rĭ-a
Car-u′-to
Cār′-vi
Car′-ў-a
Car′-ў-oc-ar
car-ў-oph-yl-læ′-a
car-ў-oph-yl-la′-ta
Car-ў-oph-yl′-lĕ-æ
Car-ў-oph-yl′-lus
Car-ў-op′-ter-is
Car-ў-o′-ta
car-ў-o′-tæ-fol′-ĭ-a
Car-ў-ot-ax′-us
car-ў-o-tid′-ĕ-um
car-ў-o′-tŏ-i′-dēs
Cas-ab-o′-næ
Cas-ca′-rĭ-a
Cas-car-il′-la
Cas-ĕ-a′-rĭ-a
cash-me′-rĭ-a′-na
Cas-im-ir-o′-a
Cas-par′-ĭ-a
Cas-par′-ў-a
cas′-pĭ-a
cas′-pic-a
Cas-san′-dra
Cas-seb-ee′-ra
Cas-sel′-ĭ-a
Cas′-sĭ-a
cas-sĭ-ar-ab′-ic-us
Cas′-sid-a
Cas-si′-ne
Cas-si′-nĭ-a
Cas-si-ni-a′-na
cas-si-nŏ-i′-dēs
Cas′-sĭ-op-e
cas-su′-bic-us
Cas-sum-u′-nar
Cas-sy′-tha
Cas-sy′-thĭ-a
cas′-ta
Cas-tag′-nĕ-i
Cas-tal′-ĭ-a
Cas-tan′-ĕ-a*
Cas-tan-os-per′-mum
Cas-til-le′-ja
Cas-til-lo′-a
Cas′-tra
Cas′-trum
Cas-u-ar-i′-na
Cas-u-ar-i′-nĕ-æ

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Cat-ak-id-oz-a′-mĭ-a
Cat-al′-pa
cat-al-pæ-fol′-ĭ-a
Cat-an-anch′-e
Cat-ap′-pa
cat-ar-ac′-tæ
Ca-ta′-rĭ-a
Cat-as-e′-tum
cat-aw-bĭ-en′-se
Cat′-ech-u
Cat-e-na′-rĭ-a
Cates-bœ′-a
Cates-bœ′-i
Cath′-a
Cath-ar-anth′-us
Cath-ar-i′-næ
cath-ar′-tic-a
Cath-car′-ti
Cath-car′-tĭ-a
Cath-car′-tĭ-i
Cat′-ĭ-ang
Cat′-il-lus
Cat-ob-las′-tus
Cat-op′-sis
cat-op′-ter-on
Cat-ra′-rĭ-a
Catt-ley′-a
Catt-ley-a′-num
cau-cas′-ic-us
cau-da′-tum
cau-dic-ul-a′-tum
cau-dif-or′-mis
caul-es′-cens
cau-lĭ-a-la′-ta
cau-lif-lo′-ra
Cau-loph-yl′-lum
Cau-lo-ra′-pa
cau-lor-rhi′-zus
cav′-a
Cav-an-il-le′-sĭ-i
Cav-en-dish′-ĭ-a
Cav′-en-dish-ĭ-a′-num
Cav-en-dish′-ĭ-i
cav-e′-nĭ-a
cay-en-nen′-sĕ
cĕ-an-o′-thif-ol′-ĭ-a
Cĕ-an-o′-thus
ceb-en-nen′-sis
Ceb-ol-le′-ta
Ce′-cid-om-y′-ĭ-a
Ce′-cid-om-y′-id-æ
Ce′-cid-op′-tēs
Ce-cil′-ĭ-æ
Ce-crop′-ĭ-a
Ced′-re-la
Ced-re′-lĕ-æ
Ced′-ron
Ced-ron-el′-la
Ced′-rus*
Ce-i′-ba
Ce-las-trin′-ĕ-æ
Ce-las′-trus*
ce-la-toc-au′-lis
Ce-lo′-sĭ-a*
Cel′-sĭ-a
Cel-sĭ-a′-na
Cel′-sĭ-i
Cel-tid′-ĕ-æ
cel-tid-if-ol′-ĭ-a
Cel′-tis
Cem′-bra
cen-chrŏ-i′-dēs
cen-i′-sĭ-a
Cen-tau′-rĕ-a
Cen-tau′-rĭ-um
cen-tau-rŏ-i′-dēs
Cen′-ter-æ
cen-tet-e′-rĭ-us
cen-tif-ol′-ĭ-a
Cen-tif-ol′-ĭ-æ
Cen-toth-e′-ca
Cen-trad-e′-nĭ-a
Cen-tran-the′-ra
cen-tran′-thif-ol′-ĭ-us
Cen-tran′-thus
Cen-troc-ar′-pha
Cen-tro′-nĭ-a
Cen-trop-et′-a-lum
Cen-trop-o′-gōn
Cen-tros-ol-e′-nĭ-a
Cen-tros-te′-ma
Ce-o′-dēs
Ce′-pa
ce-pæ-vo′-rum
ce-pa′-rum
Ceph-a-e′-lis
Ceph-al-an-the′-ra*
Ceph-al-anth′-us
Ceph-al-a′-rĭ-a
Ceph-al-i′-na
Ceph-al-on′-ĕ-on
ceph-al-o′-nic-a
Ceph-al-ot-ax′-us
ceph-al-o′-tēs
Ceph-al-o′-tus
ce′-pul-æ
ce-ræ-flo′-ra
ce-ram-en′-sis
Cer-an-the′-ra
Cer-as-ei′-dos
cer′-as-i
cer-as-if′-er-a
cer-as-if-or′-mis
cer-as-tĭ-ŏ-i′-dēs
Cer-as′-tĭ-um
Cer′-as-us
Cer-at′-ĭ-ol-a*
Cer-at-oc-au′-la
cer-at-oc-au′-lis
Cer-at-oc-eph′-al-us
Cer-at-och-i′-lus
Cer-at-od-ac′-tyl-is*
Cer-at-og′-yn-um
Cer-at-ol′-ob-us
Cer-at-on′-ĕ-on
Cer-at-o′-nĭ-a
Cer-at-op-et′-al-um
cer-at-oph-yl′-la
Cer-at-op′-ter-is
Cer-at-os-te′-ma
Cer-at-os-tig′-ma
Cer-at-oz-a′-mĭ-a
Cer′-ber-a
Cer′-cis
Cer-coc-ar′-pus
Cer-cos′-por-a*
ce′-reĕ-ol′-ĭ-um
ce-rĕ-if-or′-mis
Ce′-rĕ-us*
ce-rif′-er-a
ce′-rin-a
Ce-rin′-the
ce-rin-thŏ-i′-dēs
Cer-is′-cus
cer′-nŭ-a
Ce-rop-e′-gĭ-a
Ce-rop-las′-tēs
Ce-rox′-yl-on
Cer′-ris
Cer-van-te′-sĭ-i
Cer-vi-ca′-rĭ-a
cer-vi-ca-rŏ-i′-dēs
Cer-vic-i′-na
cer-vi′-na
cer′-vus
Ces-ped-e′-sĭ-a
ces-trŏ-i′-dēs
Ces′-trum
Ce′-ter-ach
Ce-to′-ni-a
Ceu-torh-yn′-chus
cey-lan′-ic-um
Chab-ri-e′-rĭ-i
Chad-a′-ra
Chæ-nes′-tes
Chæ-nes′-thēs
Chæ-nos′-tom-a
Chæ-roc-am′-pa
chæ-roph-yl′-lŏ-i′-dēs
Chæ-roph-yl′-lum
Chæ-tan-the′-ra
Chæ-toc′-al-yx
Chæ-toch-i′-lus
Chæ-tog-as′-tra
Chæ-tom′-ĭ-um
Chæ-tos′-por-a
Chail-la-a′-num
Cha-ir′-i-a
Cha-ir′-i-i
Chak-a-at-el′-la
Chal′-cas
chal-ce-don′-ic-um
cha!-cog′-raph-us
cha-lep-en′-sis
Cham-æ-bat′-ĭ-a*
Cham-æ-bat′-ĭ-a′-rĭ-a
Cham-æ-bux′-us
Cham-æ-cer′-as-us
Cham-æ-cis′-tus
Cham-æ-cyp′-ar-is
Cham-æ-cyp-ar-is′-sus
Cham-æ-do′-re-a
Cham-æ-do′-re-æ
cham-æ-drif-ol′-ĭ-a
cham-æ-dry-ŏ-i′-des

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*u′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Cham-æ′-drў-on
Cham-æ′-drys
Cham-æ-i′-ris
Cham-æ-jas′-me
Cham-æ-lau-cĭ-a′-cĕ-æ
Cham-æ-lau′-cĭ-ĕ-æ
Cham-æ-lau′-cĭ-um
Cham-æ-le′-don
Cham-æ-mes′-pil-us
Cham-æ-mo′-rus
Cham-æ-peu′-ce
Cham-æ′-pit-ys
Cham-ær-anth′-em-um
Cham-æ′-rhod-os
Cham-æ′-rōps
Cham-æ-steph-an′-ĭ-um
Cham-ber-lay′-nĭ-i
Cham-is-so′-a
Cham-is-so′-i
Cham-is-so′-nis
Cham-la′-gu
Cham-om-il′-la
Cham-pa′-ca
Cham-pĭ-o′-ni
Chand′-ler-i
Chan-te′-rĭ-æ
Chan-tĭ′-nĭ-i
Chan-trĭ-e′-ri
Chap-ro′-nĭ-i
Chap-tal′-ĭ-a
Char-ac′-ĭ-as
Char-an′-thi-a
Char′-ĭ-eis
Chard-wood′-i-a
Char-me′-lĭ-i
Chas′-can-um
Chas-man′-thĭ-um
chat-ham′-ic-a
Chau-rĭ-e′-ri
Char-i′-ca
Chay-o′-ta
Che′-bul-a
Cheil-anth′-ēs*
cheil-anth′-um
Cheil-op-lec′-ton
Cheil-os-an′-dra
Cheim-at-ob′-ĭ-a
cheir-anth-if-ol′-ĭ-a
Cheir-anth′-us*
Chei′-ri
cheir-if-ol′-ĭ-um
Cheir-og-lōs′-sa*
cheir-oph′-or-um
Cheir-os-te′-mōn-
Cheir-os′-tyl-is
Che′-ken
Chel-i-don′-ĭ-i
chel-i-don′-ĭ-ŏ-i′-dēs
Chel-i-don′-ĭ-um*
Chel-o′-nan-the′-ra
Chel-o′-ne*
Chel-o′-nĕ-æ
chel-o-nĭ-ŏ-i′-dēs
chel-so′-ni
Che-nop-od′-i-a′-ce-æ
Che-nop-od′-ĭ-um*
Cher-e′-re
Cher-im-o′-li-a
Cher′-mes
ches-hunt-en′-sis
Ches-ter-to′-nĭ-i
Chev-al-lĭ-e′-ra
Chĭ′-a
Chĭ-az′-os-per′-mum
Chi′-ca
Chi′-gua
chi-hu-ah-u-a′-na
chil-en′-se*
Chil-ĭ-an′-dra*
Chil′-ĭ-oph-yl′-lum
Chil-o′-dĭ-a
Chi′-log-nath′-a*
Chi-lop′-od-a
Chi-lop′-sis
Chi-los-tig′-ma
Chim′-æ-ra*
Chi-maph′-il-a*
chim-bor-ac′-en-sis
Chi-mon-anth′-us
chi-nen′-se
Chi-oc-oc′-ca
Chĭ-o-nanth′-us*
Chĭ-o-nas′-pis
chĭ-on-en′-se
Chi-o′-nod-ox′-a
Chi-o-nog′-raph-is
Chir-i′-ta
Chi-rom′-yc-ēs*
Chi-ro′-nĭ-a
Chit-o′-nĭ-a
Chit′-rĭ-a
Chlam-yd′-ĭ-a*
Chlam-yd-os′-tyl-is
Chlam-ys′-por-um
Chlid-anth′-us
Chlŏ-anth′-ēs*
Chlŏ-op′-sis
Chlo′-ra*
chlo-ra′-cĕ-a
chlo-ræ-fol′-ĭ-a
chlo-ranth′-a
Chlo-ranth-a′-cĕ-æ
Chlo′-ris
Chlo-ri′-ta
chlo-roch-i′-lum
Chlo-rog′-al-um
chlo-rŏ-i′-dēs
chlo-rol-eu′-cum
chlo-ron-e′-ma
Chlo-ron-eur′-um
chlo-roph′-rys
Chlo-roph′-yt-um
chlo′-rōps
Chlo-ros′-path-a
chlo-ros-tic′-ta
Chlo-rox′-yl-on
cho-co-en′-sis
Choi-rom′-yc-ēs
Choi′-sў-a
Chois-ў-a′-na
Chom-el′-ĭ-a
Chon-drod-en′-dron
Chon-dro-rhyn′-cha
chon-tal-en′-sis
chord-if-ol′-ĭ-a
Cho-re′-tis
Cho-ris′-por-a
Cho-ris′-tēs
Chor-iz′-em-a
chor-iz′-em-if-ol′-ĭ-a
Chris′-ti
Chris-tĭ-a′-na
Chris-tў-a′-num
chro-mat-el′-la*
chry-sac-anth′-us
Chry-sal-id-oc-ar′-pus
chry-santh′-a
chry-santh′-em-if-ol′-ĭ-a
chry-santh′-em-ŏ-i′-dēs
Chry-santh′-em-um*
chry-santh′-us
chry-sĕ′-i′-dēs
Chry-se′-is
Chry-siph′-ĭ-al-a
Chry-sob-ac′-tron
Chry-sob-al-an′-ĕ-æ
Chry-sob-al′-an-us*
Chry-sob-ot′-rў-a
chry-soc-ar′-pa
Chry-soc′-om-a
Chry-so′-dĭ-um
Chry-sog′-on-um*
chry-sol-eu′-cum
chry-sol′-ob-um
chry-som′-el-as*
Chry-som-el′-id-æ
Chry-so′-pa
chry-sop-et′-al-a
Chry-soph-yl′-lum
chry′-sops
Chry-sop′-sis
chry-sor′-nis
chry-sor′-rhĕ-a
Chry-sos′-cĭ-as
Chry-sos-ple′-nĭ-um
chry-sos′-tach-ys
Chry-sos-tem′-ma
chry-sos-teph′-an-a*
chry-sos′-tom-a
Chry-soth-am′-nus
Chry-soth′-em-is
chry-soth-yr′-sus
chry-so′-tis
chry-sot-ox′-um
chry-sot′-rich-a
Chry-sox′-yl-on
Chry-su′-rus
Chtham-al′-ĭ-a
chu-qui-ten′-sis
Chy-lo′-dĭ-a
Chy-moc-ar′-pus
Chys′-is
Chy-trac-u′-lĭ-a
cib-a′-rĭ-us
cib-o′-rŏ-i′-dēs

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā*′-lmist; ĕ as in sl*ĕn*′-der; ē as in v*ē*′-ined; ĭ as in th*ĭn*; ī as in mach-*ī*′-nist; ŏ as in r*ŏt*′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Cib-o′-tĭ-um
Cic′-ca
Cic′-er
Cich-or-a′-cĕ-a′-rum
Cich-or′-ĭ-um
Cic-in-de′-la
Cic′-la
Cic-o′-nĭ-um
cic-u-tæ-fol′-ĭ-a
cic-u-ta′-rĭ-a
cic-u-tel′-la
Cid-ar′-ĭ-a
Ci-en-fu-e′-gĭ-a
Ci-en-fu-go′-sĭ-a
Ci-en-kow′-skĭ-a
Cil-ĭ-a′-rĭ-a*
cil-ĭ-a′-ris
cil-ĭ-a′-ta
cil-ĭ-a′-tif-lo′-ra
cil-ic′-ĭ-um
cil-ĭ-ol-a′-ta
cil-ĭ-o′-sa
Cim-ic-if′-ug-a
Cin-cho′-na
Cin-cho-na′-cĕ-æ
Cin-cin-a′-lis
cin-cin-na′-ta
cinc′-tus
Cin-er-a′-rĭ-a
cin-er-a′-rif-ol′-ĭ-um
cin-er′-ĕ-a
cin-nab-ar-i′-na
Cin-nam-od-en′-dron
Cin-nam-o′-mĕ-æ
cin-nam-o′-mĕ-us
cin-nam-o′-mif-ol′-ĭ-a
Cin-nam-o′-mum
Ci-o-nid′-ĭ-um
Cip-u′-ra
Cir-cæ′-a
Cir′-ce
cir-cin-a′-tus
cir-cum-scis′-sa
cir-ra′-tum
Cir-rhæ′-a
cir-rha′-ta
cir-rhif′-er-a
Cir-rhop-et′-al-um
cir-rho′-sa
Cir′-sĭ-um
cis-sam-pel-ŏ-i′-dēs
Cis-sam′-pel-os
cis-sif-ol′-ĭ-um
Cis′-sus
Cis-tin′-ĕ-æ
Cis′-tus
Cith-ar-ex′-yl-um
cit-ra′-ta
cit-rif-ol′-ĭ-a
cit-rī′-num
cit-rĭ-od-o′-ra
Cit-ron-el′-la
cit-ros′-mum
Cit-rul′-lus
Cit′-rus
ci-vi′-lis
Clad′-ĭ-us*
Clad-ob′-ĭ-um
Clad-o′-nĭ-a
Clad-os-por′-ĭ-um
Clad-ras′-tis
Clan-bra-sil-ĭ-a′-na
clan-des-ti′-na
clap-ham′-ĭ-i
Clar-ĭ-o′-nĕ-a
cla-ris′-sim-a
Clar′-kĭ-a
Clar′-kĭ-i
Clau-se′-na
cla′-va
cla′-va-Her′-cul-is
cla-va′-tum
Cla-ven′-næ
cla-vic-au′-lis
Cla′-vic-eps
cla-vic-ul-a′-ta
cla-vif-ol′-ĭ-a
Clav-i′-ja
cla′-vip-ēs
Clay′-i
Clay-to′-ni
Clay-to′-nĭ-a
Clay-to′-nĭ-a′-na
Clei-sos′-tom-a
Clei′-stēs
Clei′-trĭ-a
cle′-mat-id′-ĕ-a
Cle′-mat-id′-ĕ-æ
Cle′-mat-is*
Cle-mat-i′-tis
Cle-o′-me
cle-o′-mŏ-i′-dēs
Cle-rod-en′-dron
Cle′-thra
cle-thrŏ-i′-dēs
Clere-land′-i
Cle-ye′-ra
Clĭ-anth′-us
Cli-de′-mĭ-a
Clif-ford′-ĭ-æ
Clif-to′-nĭ-a
Cli-nop-od′-ĭ-ŏ-i′-dēs
Cli-nop-od′-ĭ-um*
Cli-nos-tyl′-is
Clin-to′-nĭ-a
Cli-tanth′-us
Cli-tor′-ĭ-a
Cli′-vĭ-a
Cli-vĭ-a′-num
Clo-men-oc′-om-a
Clowes′-ĭ-a
Clowes′-ĭ-i
Clu′-sĭ-a
clu′-sĭ-æ-fol′-ĭ-a
Clu-sĭ-a′-na
Clu-sĭ-a′-næ
Clus′-si-i
Clay′-ti-a
clyp-e-a′-ta
Cne-mi′-di-a*
Cnĕ-o′-rum
Cne′-stis
Cne-thoc-am′-pa
Cni′-cus
Cni′-dĭ-um*
cŏ-ad-u-na′-ta
cŏ-arc-ta′-ta
Cob-æ′-a
Co-ba-rĭ-en′-sis
Cob′-bĭ-a′-num
Co-bur′-gĭ-a
Co′-ca
Coc′-cid-æ
coc-cif′-er-a
Coc′-cin-æ
coc-cin′-ĕ-a
Coc-cin-el′-la
Coc-cin-el′-lid-æ
Coc-cin-el-lif′-er-a
Coc-cin′-ĕ-um
Coc-coc-yp′-sel-um
Coc-col′-ob-a
Coc-cot′-or-us
Coc′-cul-us
Coc′-cus
co-chin-chi-nen′-sis
co-chin-el-lif′-er-a
Coch-lĕ-a′-ri-a
coch-le-a′-ris
coch-le-a-ris′-path-um
coch-lĕ-a′-ta
Coch-li′-od-a
Coch-lĭ-os-per′-mum
Coch-lĭ-os-te′-ma
co-cŏ-i′-dēs
Co-cŏ-i′-næ
Co′-cos
Co-dĭ-æ′-um
Co-do′-nĭ-um*
co-do-no′-dēs
Co-do-noph′-or-a
Co-do-nop′-sis
cœ-les′-te
Cœ-les-ti′-na
Cœ′-li-a
Cœ-lĭ-op′-sis
cœ-li-ros′-a
Cœ-log-lēs′-sum
Cœ-log′-yn-e
Cœ-los′-tyl-is
coer-ul′-e-a
coer-ul-es′-cens
Cof-fe′-a
Co-hu′-ne
Co′-ix
Co′-la
Col′-ax
Col-bu′-ti-a
col′-chic-a
Col-chic′-ĕ-æ
col-chic-if-lo′-ra
Col′-chic-um
Col-de′-ni-a
Co′-le-a
Cole-brcoo′-ki-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′: ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined: ĭ as in thĭn; ī as in mach-ī′-nist: ŏ as in rŏt′-ten: ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in *house*: g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Co′-lĕ-i
Cole-mam′-ĭ-i
Col-en′-sŏ-i
col-ĕ-ŏ-i′-dēs
Col-ĕ-on-e′-ma
Col-ĕ-oph′-or-a
Col-ĕ-op′-ter-a
Col-ĕ-os-por′-ĭ-um
Col-er-o′-a
Col′-ĕ-us*
Col-la′-nĭ-a
Col-le′-tĭ-a
Col-ley′-i
Col-lin′-sĭ-a
Col-lin-so′-nĭ-a
col-li′-nus
Col-lod-o′-nĭ-a
Col-lo′-mĭ-a
Col-lyb′-ĭ-a
Col-oc-a′-sĭ-a
col-oc-a′-sĭ-æ-fol′-ĭ-a
Col-oc-yn′-this
Col-oq-uin′-ĭ-a
col-o′-num
col-o′-rans
col-o-ra′-ta
col-os′-sus
col-po′-dēs
Colqu-houn′-ĭ-a*
Col-ub-ri′-na
Col-um′-ba
Col-um-ba′-rĭ-a
Col-um-ba′-rĭ-æ
col-umb-ĭ-a′-num
Col-um-el′-la
col-um-el-la′-ris
Col-um-el′-li-a
Col-um-el-li-a′-cĕ-æ
Col-um′-næ
col-um-na′-re
Col-um′-nĕ-a
Col-u′-ri-a
Col-ur′-na
Col-u′-tĕ-a
Col′-vil-le′-i
Co-ly′-sis
Com′-ă-au′-rĕ-a
Com-ac-li′-nĭ-um
com′-ans
Com-ar-op′-sis
Com-ar-os-taph′-yl-is
Com′-ar-um
Com-a-tog-lōs′-sum
com-a′-tus
Com-bre-ta′-cĕ-æ
Com-bre′-tum
Com-e-sper′-ma
Com-mel-i′-na
Com-mel-i-na′-cĕ′-æ
Com-mel-y′-ni
Com-mer-so′-ni
Com-mer-son′-ĭ-a
Com-mer-so′-nĭ-a′-na
Com-mer-so′-nĭ-i
Com-mĭ-anth′-us
com-mu′-nis
com-mu-ta′-tum
Com-oc-lad′-ĭ-a
com-o′-sa
com-pac′-ta
Com-par-et′-tĭ-a
com-pla-na′-tus
com-plex′-a
com-plic-a′-ta
Com-pos′-it-æ
com-pos′-it-um
com-pres′-sum
Comp-san′-thus
Comp′-sŏ-a
comp′-ta
Comp-to′-nĭ-a
Comp-to-nĭ-a′-na
Co-nan′-dron*
Co-nan′-the-ra
con-cav-æ-fol′-ĭ-a
con′-cav-um
conch-æ-fol′-ĭ-a
conch-if′-er-um
conch-if-lo′-ra
conch-if-ol′-ĭ-a
conch-if-or′-mis
Con′-chĭ-um
con-cin′-na
con′-col-or
con-cor′-dĭ-a
Con-dam-i′-nĕ-a
con-den-sa′-tus
con-fer′-ta
con-fer-tif-lo′-ra
con-fer′-væ
con′-flŭ-ens
con-for′-me
con-fu′-sa
con-ges′-ta
con-glom-er-a′-ta
co′-nic-um
Co-nif′-er-æ
co-nif-er-a′-ta
co-nĭ-if-ol′-ĭ-um
Co-ni′-um*
con-jug-a′-tum
Con-nar-a′-cĕ-æ
Con′-nar-us
Co-noc-ar′-pus
Co-noc-eph-al′-i-æ
Co-noc-li′-mi-um
co-nŏ-i′-dĕ-us
Co-noph-ar-yn′-gĭ-a
co-nōp′-sĕ-a
Co-nos-per′-mum
Co-nos′-tach-ys
Co-nos-teg′-ĭ-a
Co-nos-teph′-ĭ-um
Co-not-rach-e′-lus
Co-not-rich′-ĭ-a
Con-rad -ĭ-a
Con-rad′-ĭ-i
Con-sid-er-an′-ti
con-so-bri′-na
con-sol′-id-a
con-spic′-ŭ-a
con-stric′-tum
con-ta-min-a′-ta
con-tig′-ŭ-um
con-tor′-ta
con-trac′-ta
con-tra-*yer′-ba*
Con-val-la′-rĭ-a
con-val-la′-rĭ-ŏ-i′-dēs
Con-vol-vul-a′-cĕ-æ
con-vol-vul-a′-cĕ-um
Con-vol′-vul-us
Con-y′-za
con-y-zŏ-i′-dēs
Coo′-kĭ-a
Coo-kĭ-a′-num
Coo′-kĭ-i
Coo-ling′-ĭ-i
Coo′-per-i
Coo-per′-ĭ-a
Coo-per-ĭ-a′-num
Cop-ai′-fer-a
co-pal-li′-na
Cop-er-nic′-ĭ-a
Cop-ri′-nus
Cop′-ris
Cop-ros′-mha
Cop′-tis
Cor-ad-i′-nĕ-i
cor-al-lif-lo′-rum
cor-al′-lin-a
cor-al′-lip-ēs
Cor-al-lod-en′-dron
co-ran′-ic-a
Cor-bar-ĭ-en′-sis
Cor-bul-a′-rĭ-a
Cor′-chor-us
Cor-co′-va-den′-sis
cor-da′-ta
Cor-der-oy′-i
Cor′-dĭ-a
Cor-dĭ-a′-cĕ-æ
cor-dif-lo′-ra
cor-dif-ol′-ĭ-us
cor-dig′-er-a
Cor-do-ben′-sis
Cor′-dyc-eps
Cor-dyl-i′-ne
cor-dyl-i′-nŏ-i′-dēs
Cor-e′-ma
Cor-e-op′-sis
Cor-e-thros′-tyl-is
Cor-go′-nen-sis
cor-ĭ-a′-cĕ-um
Cor-ĭ-an′-drum
Cor-ĭ-a′-rĭ-a
Cor-ĭ-a′-ri-ĕ-æ
cor-id-if-ol′-ĭ-um
Cor-id′-ĭ-on
cor-ĭ-if-ol′-ĭ-a
cor-ĭ-oph-yl′-la
Cor′-is
Cor-na′-cĕ-æ
Cor-ney-a′-na
cor-nic-ul-a′-tus

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

cor-nif-ol′-ĭ-um
cor-nig-er′-um
Cor-ning-ĭ-a′-na
Cor-ning′-ĭ-i
cor-nu-bĭ-en′-se
Cor-nu-co′-pĭ-æ
Cor′-nus
Cor-nu′-ti
Cor-nu′-tĭ-a
cor-nu′-tum
Cor-o′-kĭ-a
Cor-ol′-lif-lo′-ræ
cor-om-an-del-ĭ-a′-na
cor-o′-nans
cor-o-na′-rĭ-a
cor-o-na′-ta
Cor-o-nil′-la
cor-o-nil-læ-fol′-ĭ-a
cor-o-nil-lŏ-i′-dēs
cor-o′-nop-if-ol′-ĭ-a
Cor-o′-nop-us
Cor-re′-a
cor-re′-æ-fol′-ĭ-a
cor-ru-ga′-ta
cor-sic-a′-na
cor′-sic-um
cor-tic-ic′-ol-or
cor-tic-o′-sum
Cor-ti-na′-rĭ-us
Cor-tu′-sa
cor-tu′-sæ-fol′-ĭ-a
cor-tu-sŏ-i′-dēs
cor-us′-ca
cor-us′-cans
cor′-vi
Cor-ў-anth′-ēs
Cor-yd′-al-is
Cor-yl-a′-cĕ-æ
cor-yl-if-ol′-ĭ-a
Cor-yl-op′-sis
Cor′-yl-us
cor-ymb-if′-er-um
cor-ymb-if-lo′-ra
cor-ymb-o′-sum
Cor-yn-e′-um
Cor-yn-oc-ar′-pus*
cor-yn-o′-dēs
Cor-yn-oph-al′-lus
Cor-yn-os′-ty-lēs
Cor′-yph-a
Cōr-ys-an-the′-ra
Cor-ys-an′-thēs
Cos-cin′-ĭ-um
Cos-man′-thus
Cos-me′-lĭ-a
Cos-mi-bu-e′-na
Cos-mid′-ĭ-um
Cos′-mos
Cos-sig′-nĭ-a
Cos′-sus
Cos-tæ′-a
cos-ta-ri-ca′-na
cos-ta-ri-cen′-se
cos-ta′-ta
Cos′-tus
cot-in-if-ol′-ĭ-um
Cot′-in-us
Cot-o′-nĕ-as′-ter
Cot-ty-a′-na
Cot′-ul-a
Cot-yl-e′-don
Cou-blan′-dĭ-a
Coul′-ter-i
Coul-ter′-ĭ-a
Coul-ter-ĭ-a′-na
Co′-um
Cour′-bar-il
Cour-cel′-li
Cour′-ger-o
Cou-rou-pi′-ta
Cour-se′-tĭ-a
Cour′-tĭ-i
Cou-si′-nĭ-a
Cou-ta′-rĕ-a
Cou-tou′-bĕ-a
Cow′-a
Cow-an′-ĭ-a
Cra′-bro
Crac′-ca
cra-co′-vĭ-a
Cram′-be
Cras-ped-a′-rĭ-a*
Cras-ped′-ĭ-a
Cras-ped-ol′-ep-is
cras-sic-au-da′-ta
cras-sic-au′-lis
cras-sif-ol′-ĭ-um
Crass-i′-na
cras-sin-er′-vĭ-um
cras-sin-o′-de
cras′-sip-ēs
Cras′-sul-a
Cras-sul-a′-cĕ-æ
crat-æg-if-ol′-ĭ-a
crat-æg′-in-a
crat-æg-ŏ-i′-dēs
Crat-æ′-gus
Crat-æ′-va
Cra-te-rel′-lus
cra-te-rŏ-i′-dēs
Craw-fur′-dĭ-a
Cree-a′-na
cre-na′-ta
cre-na-tif-lo′-rum
cre-na-tif-ol′-ĭ-um
cre-nu-la′-ta
Cre-pid-a′-rĭ-a
cre-pid-a′-tum
Cre-pid-ĭ-um
Cre′-pis*
crep′-it-ans
Cres-cent′-ĭ-a
Cres-cent-ĭ-a′-cĕ-æ
cre-ta′-cĕ-um
cre-ten′-sis
cre′-tic-us
cri-nif′-er-a*
cri-nif-lo′-rum
cri-ni′-ta
Crin-od-en′-dron*
Crin-o′-nĭ-a
Crin′-um
Cri-oc′-er-is
cris′-pa
cris-pa′-tum
cris-pil-ab′-ĭ-a
cris′-pul-um
Cris′-tă-gal′-li
Cris-ta′-rĭ-a
cris-ta′-ta
cris-ta-tel′-lum
crith-mif-ol′-ĭ-a
Crith′-mum
croc-a′-ta
croc′-ĕ-us
croc-id-ip′-ter-um
croc-if-ol′-ĭ-us
Croc-os′-mĭ-a
Croc-os-mif-lo′-ra
Croc′-us*
Crœ′-sĭ-a
Crœ′-sus
Croo′-mĭ-a
Cros-san′-dra
Cross′-i-i
Crot-al-a′-ri-a
Crot′-on*
Crou′-cher-i
Crow′-ĕ-a
Crow-ĕ-a′-na
Cruc-ĭ-an-el′-la*
cruc-ĭ-a′-tum
Cruc-if′-er-æ
Cruc-if′-er-a′-rĭ-um
cruc′-is
crŭ-en′-ta
Cruik-shank′-ĭ-a
Cruik-shank′-ĭ-i
Crus-gal′-li
Crus-ta′-cĕ-a
Crux-And′-re-æ
Cryp-tan′-thus
Cryp-toc-am′-pus
Cryp-toch-i′-lus
cryp-toc′-op-is*
Cryp-toc-or′-yn-e
Cryp-tog-am′-ĭ-a
Cryp-tog-ram′-me
Cryp-tol′-ob-us
Cryp-tom-er′-ĭ-a
Cryp-toph-rag′-mĭ-a
Cryp-tos-ac′-cus
Cryp-tos-o′-rus
Cryp-tos′-tach-ys
Cryp-tos-teg′-i-a
Cryp-tos-tem′-ma
Cryp-tos′-tyl-is
crys-tal′-lin-um
Cub-æ′-a
Cu-be′-ba
cub-en′-se
cuc-u′-li
cuc-ul-la′-rĭ-a
cuc-ul-la′-tum
cuc-um-er-if-ol′-ĭ-us

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′: ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in *house*; **g, c, and ch, always hard, as, for example, g** in *g*ood, c in muscular, and ch in *Ch*ristian. **(For the old method, see page 276.)**

* **This word is discussed at the end of the Pronouncing Dictionary.**

Pronouncing Dictionary—*continued.*

Cuc′-um-is
Cuc-ur′-bit-a
Cuc-ur-bit-a′-cĕ-æ
Cuc-ur-bit-a′-rĭ-a
cuc-ur-bit-i′-na
Cud-ra′-nĭ-a
Cu-je′-te
Cul-ca′-sĭ-a
Cul′-cit-a
Cul-il-aw′-au
cul-tra′-ta
cul-trif-ol′-ĭ-um
cul-trif-or′-mis
Cum-ing′-ì-a
Cum-ing-ĭ-a′-na
Cum-ing′-ĭ-i
Cum-ming′-ì-i
Cun′-cĕ-a
cun-dĭ′-nam-ar-cen′-sis
Cun-du-ran′-go
cun-ĕ-a′-tus
cun-ĕ-if-ol′-ĭ-um
cun-ĕ-if-or′-mis
Cun-i′-la
Cu-ni′-na
Cun-ning-ham′-ĭ-a
Cun-ning-ham-ĭ-a′-na
Cun-ning-ham′-ĭ-i
Cu-no′-nĭ-a
Cu-no′-nĭ-ĕ-æ
Cu-pa′-ni
Cu-pa′-nĭ-a
Cu-pa-nĭ-a′-nus
Cu′-phĕ-a
Cu′-pĭ-a
cup′-rè-a
cup-rĕ-a′-ta
cup-res-pin-na′-ta
Cup-res-sin′-è-æ
cup-res′-sin-um
cup-res-sŏ-i′-dēs
Cup-res′-sus
Cu-pul-if′-er-æ
cu-ras-sav′-ic-um
Cu-ra-tel′-la
Cur-cul′-ig-o
cur-cul′-ig-ŏ-i′-dēs
Cur-cul′-ì-o
Cur-cul-ì-o′-nid-æ
Cur′-cum-a
Cur-mer′-ì-a
Cur-now-ì-a′-na
Cur-ro′-ri
Cur-tis′-ì-a
Cur-tis′-ì-i
cur′-tum
cur-va′-tor
cur-va′-tum
cur-vid-en-ta′-tum
cur-vif-lo′-rus
cur-vif-ol′-ĭ-um
*Cus-cu′-ta**
Cus-cu-ta′-cĕ-æ
cus-cu-tæ-form′-is
Cus-pid-a′-rĭ-a
cus-pid-a′-ta
Cus-so′-nĭ-a
cu-tis-pon′-gĭ-a
Cy′-am-us*
Cy-an-anth′-us
cy-an′-ĕ-a
Cy-an-el′-la
cy-an-oc-ar′-pus
cy-an-oc-oc′-ca
Cy-an-oph-yl′-lum
cy-an-os-per′-ma
Cy-an-o′-tis
Cy-an′-us*
Cy-ath′-ĕ-a*
cy-ath-ĕ-æ-fol′-ì-um
cy-ath-ĕ-ŏ-i′-dēs
Cy-ath-o′-dēs
Cy-ath-oph′-or-a
Cyb′-el-e
Cy-bel′-ĭ-on
Cyb′-is-ter
Cyc-ad-a′-cĕ-æ
cyc-ad-ŏ-i′-dēs
Cy′-cas
Cy′-clam-en*
Cy-clan′-dra
Cy-clob-oth′-ra
Cy-clo′-dĭ-um
Cy-clog′-yn-e
Cy-clon-e′-ma
Cy-clop-el′-tis
Cy-clo′-pĭ-a
Cy-clop-o′-gōn
Cy-clos-te′-mōn
Cyc-no′-chēs
Cyd-o′-nĭ-a
cyd-o′-nĭ-æ-fol′-ĭ-a
Cyl-ic-ad-e′-nĭ-a
cyl-in-dra′-cĕ-a
cyl-in′-dric-um
cyl-in′-drus
Cyl-is′-ta
Cy-mat′-ĭ-on
Cym-bal-a′-rĭ-a
Cym-bid′-ĭ-um
cym-bif-or′-mis
Cym-bu′-rus
cy-mo′-sa
cyn-anch′-ic-a*
cyn-anch-if-ol′-ĭ-a
cyn-anch-ŏ-i′-dēs
Cyn-anch′-um
Cyn′-ar-a
cyn-ar-ŏ-i′-dēs
Cyn-ip′-id-æ
Cyn′-ips
Cyn-oc-ram′-be
Cyn-oc′-ton-um*
Cyn′-od-on
Cyn-og-lōs′-sum
Cyn-om-e′-tra
cyn-oph-al-loph′-or-a
Cyn-os′-bat-i
Cyp-ar-is′-sĭ-as
Cyp-el′-la
Cyp-e-ra′-cĕ-æ
Cyp-e′-rus*
Cy′-phĭ-a*
Cy-phok-*en′*-tĭ-a
Cy-phom-an′-dra
Cy-phos-per′-ma
Cyp′-ri
Cyp-rip-ed′-ĭ-ĕ-æ
Cyp-rip-ed′-ĭ-um*
cyp′-rĭ-us
Cy-ril′-la
Cy-ril′-lĕ-æ
Cyr′-ta
Cyr-tan-dra′-cĕ-æ
Cyr-tan-the′-ra
Cyr-tan-thif-lo′-rum
Cyr-tan′-thus
Cyr-toc′-er-as
Cyr-toch-i′-lum
Cyr-tod-ei′-ra
Cyr-tom-iph-leb′-ĭ-um
Cyr-tom′-ĭ-um
Cyr-top-e′-ra
Cyr-toph-yl′-lum
Cyr-top-od′-ĭ-um
Cyr-tos′-tach-ys
Cys-tac-anth′-us
Cys-tan′-the
Cys-tid-ĭ-anth′-us
Cys-top′-ter-is
Cys′-top-us
cyt-is-ŏ-i′-dēs
Cyt′-is-us
Cyt-oph-yl′-lum
Czac′-kĭ-a

Dab-æ′-cĭ-a
dac-ryd-ĭ-ŏ-i′-dēs
Dac-ryd′-ĭ-um
Dac′-tyl-ic-ap′-nos*
dac′-tyl-if′-er-a
dac′-tyl-if-ol′-ĭ-um
Dac′-tyl-is
Dac′-tyl-oc-ten′-ĭ-um
dac-tyl-ŏ-i′-dēs
dac′-tyl-on
Dac-tyl-op′-ĭ-us
dac-tyl-op′-ter-um
Dac-tyl-os′-tyl-ēs
dæ-dal′-ĕ-a
Dæ′-mĭ-a
Dæ-mo′-nor-ōps
dag-u-en′-se
*Dah′-lĭ-a**
Da′-hoon
da-hu′-ric-a
Dă′-is
Dal-ber′-gĭ-a
dal-ber-gĭ-ŏ-i′-dēs
*Da′-lĕ-a**
dal-ec-ar′-lic-a
Dal-ech-am′-pĭ-a
Dal-ech-am′-pĭ-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der: ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n: au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Dal-gairn′-sĭ-æ
Dal-hou′-sĭ-æ
Dal-ib-ār′-da
Dal-mai-sĭ-a′-na
dal-mat′-ic-a
Dal-rymp′-lĕ-a
dam-as-ce′-na
Dam-as-o′-nĭ-um
Dam′-mar-a
Dam-nac-anth′-us
Dam-pĭ-e′-ra
Dam-pĭ-e′-ri
*Da′-nă-a**
Dan′-a-e
Da′-næ-a
Dan-ĭ-el′-ĭ-i
Daph′-ne
daph-ni′-tēs
daph-nŏ-i′-dēs
Da′-rĕ-a
Dar-ling-to′-nĭ-a
Dar′-win-i
Dar-win′-ĭ-a
Dar-win′-ĭ-i
das-ў-anth′-a
das-yc-ar′-pum
das-yc-eph′-al-um
Das-ych-i′-ra
das-yg-lōt′-tis
das-yl-i′-rĭ-ŏ-i′-dēs
Das-yl-i′-rĭ-on
das-yph-yl′-la
das-yp-o′-gōn
das-ys-per′-ma
das-ys′-tyl-a
Dat-is′-ca
Dat-is′-cĕ-æ
Dat-u′-ra
Dau-ben-to′-nĭ-a
Dau-be′-nў-a
dau-cel′-la
dau-cif-ol′-ĭ-um
Dau′-cus
dau′-ric-a
Daut-wit′-zĭ-i
Dav-al′-lĭ-a
Dav-al-lĭ-a′-na
dav-al-lĭ-ŏ-i′-dēs
Dav-ĕ-au-a′-na
Dav-ĕ-au-ĭ-a′-na
Da-vid-ĭ-a′-na
Da-vid-so′-ni
Da-vid-so′-nĭ-a
Da-vie′-sĭ-a
Da-vis′-ĭ-i
da-vu′-ric-um
Da′-vў-a
Daw-so′-ni
Daw-so-nĭ-a′-na
Day-a′-na
dĕ-al-ba′-ta
de Bar-y-a′-num
de′-bil-e
Dec-ab-el′-on-e*
Dec-aisn′-ĕ-a
Dec-aisn-ĕ-a′-na
Dec-aisn′-ĕ-i
Dec-an-doll′-ĭ-i
dec-an′-dra
dec-ap-et′-al-a
Dec-as-per′-mum
Dec-as′-po-ra
dec-em-li-nĕ-a′-ta
dec-id′-ŭ-a
de-cip′-ĭ-ens
Deck-er′-ĭ-a
Deck-er-ĭ-a′-num
de-cli-na′-tum
de-col-o′-rans
de-com-pos′-it-a
dec-o′-ra
dec′-or-ans
Dec-os-ter-ĭ-a′-na
dec-um-a′-na
Dec-um-a′-rĭ-a
de-cum′-bens
de-cur′-rens
de-cur-si′-va
dec-us-sa′-ta*
de-fic′-ĭ-ens
de-fix′-um
de-flex′-a
de-fol-ĭ-a′-rĭ-a
de-for′-mans
de-for′-mis
De-her-ain′-ĭ-a
Deil-iph′-il-a
Del-ab-e′-chĕ-a
Del-ar′-brĕ-a
Del-au-a′-na
de-lec′-ta
de-lic-a′-ta
de-lic-a-tis′-sim-a
de-lic-ĭ-o′-sa
De-li′-ma
De-los′-tom-a
del-phi-nen′-sis
del-phi-nif-ol′-ĭ-um
Del-phi′-nĭ-um*
del-tog-lōs′-sum
del-toid′-ĕ-a
Del-to-i′-dēs
Dem-id-o′-vĭ-a
de-mis′-sum
De-moc-rit-e′-a
den-dri′-tic-um
Den′-drĭ-um
Den-drob′-ĭ-um
Den-droch-i′-lum
Den-droc-ol′-la
den-drŏ-i′-dĕ-um
Den-drol-ob′-ĭ-um
Den-drom-e′-con*
Den-drop′-an-ax
Den-dros′-er-is
Den-is-o-nĭ-a′-num
Den-is-o′-nĭ-i
Den-nis-o′-nĭ-i
Denn-stæd′-tĭ-a
den′-sa
den-sa′-ta
dens′-can-is
den-sif-lo′-rum
Den-ta′-rĭ-a
den-ta′-ta
den-tic-ul-a′-tum
Den-tid′-ĭ-a
den-to′-sus
de-nu-da′-ta
De-od-a′-ra
Dep-ar′-ĭ-a
de-pau′-per-ans
de-pau-per-a′-ta
de-pen′-dens
Dep′-pĕ-a
Dep-pe-a′-na
Dep′-pĕ-i
de-pres′-sa
De-pres-sa′-rĭ-a
de-pres-sel′-la
Der-map′-ter-a
Der-mat-oph′-or-a
Der-wen′-tĭ-a
Des-cant-a′-rĭ-a
Des-champ-sĭ-a′-na
de-scis′-cens
Des-er′-ti
Des-fon-tai′-nĕ-a
Des-manth′-us
Des-mel-ĭ-a′-na
Des-moch-æ′-ta
Des-mo′-dĭ-um
des-mon-cŏ-i′-dēs
Des-mon′-cus
de-struc′-tor
dĕ-us′-tus
Deut′-zĭ-a
Dev-an-say-a′-na
de-vas-ta′-trix
Dev-e-au-a′-na
Dev-o′-nĭ-a′-num
Dev-o′-nĭ-en′-sis
Dev-o-sĭ-a′-na
Dĭ-ac-al′-pe
di-ac-an′-tha
Di-ac′-rĭ-um
dĭ-ad-e′-ma
dĭ-ad-e-ma′-tus
Dĭ-a′-næ
dĭ-an′-dra
Dĭ-a-nel′-la
Dĭ-an-the′-ra
dĭ-anth-ŏ-i′-dĕ-a
di-anth-ŏ-i′-des
Dĭ-anth′-us
Di-ap-en′-sĭ-a
Dĭ-ap-en-sĭ-a′-cĕ-æ
dĭ-ap-en-sŏ-i′-des
dĭ-aph′-an-um
Dĭ-aph′-or-a
Dĭ-aph-or-anth′-em-a
Dĭ-as′-cĭ-a
Dĭ-as′-ĭ-a
Di-as-pi′-næ
Di-as′-pis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

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Pronouncing Dictionary—*continued.*

Dĭ-as-tel′-la
Dĭ-as-te-man′-the
Dĭ-as′-troph-us
Dib-blem′-ma
Dic-en′-tra
Dic-er′-ma
Dich-æ′-a*
Dich-op′-sis
Dich-o′-ris-an′-dra
Dich-os-e′-ma
Dich-os′-ma
dich-ot′-om-a
dich′-rŏ-a
Dich-ro′-ma
Dich-ros′-tach-ys
Dich-rot′-rich-um
Dick-ie-a′-na
Dick-so′-ni
Dick-so′-nĭ-a
Dick-so-nĭ-a′-na
Dic-lip′-ter-a
Dic-lyt′-ra*
dic-oc′-cum
dic-ra-nan-the′-rum
Dic-ra-nu′-ra
Dic-tam′-nus
Dic-tŷ-anth′-us
Dic-tym′-ĭ-a
dic-tŷ-oc-al′-lis
Dic-tŷ-og-ram′-me*
Dic-tŷ-op′-ter-is
Dic-tŷ-op′-ter-yx
Dic-tŷ-os-per′-ma
Dic-tŷ-ox-iph′-ĭ-um
Dic-yr′-ta
Did-ĭ-e′-ri
Did-is′-cus
did-is′-tich-a
did′-ym-a
Did-ym-oc-ar′-pus*
Did-ym-och-læ′-na
Did-ym-os-per′-ma
Di-ef-fen-bach′-ĭ-a
Dĭ-el′-lĭ-a
Dĭ-el-yt′-ra*
Dĭ-er-a′-ma
Di-er-vil′-la
Dĭ-et′-ēs
dif-for′-me
dif-fu′-sus
Dig-by-a′-na
Dig-it-a′-lĕ-æ
dig-it-a-lif-lo′-rum
Dig-it-a′-lis*
Dig-it-a′-rĭ-a
dig-it-a′-ta
Dig′-raph-is
Digs-wel-lĭ-a′-na
di-la-ta′-tum
Dil-a′-tris
di-la′-tum
Dil-le′-ni-a
Dil-le-nĭ-a′-cĕ-æ
Dil-le′-nĭ-i
Dill-wyn′-ĭ-a

di-mid-ĭ-a′-tum
Dim-oc-ar′-pus
Dim-orph-anth′-us
Dim-orph-oth-e′-ca
dim-orph′-um
Di-ne′-tus
Din-eu′-ra
dĭ-od′-on
dĭ-oi′-ca
Dĭ-o-næ′-a
Di-o′-on
Di-o-po′-gōn
Dĭ-os-cor′-ĕ-a
Dĭ-os-cor-ĕ-a′-cĕ-æ
Dĭ-os-cor′-ĕ-æ
Dĭ-os-cor′-id-is
Dĭ-os′-ma
dĭ-os-mæ-fol′-ĭ-a
dĭ-os-mif-ol′-ĭ-a
dĭ-os-mŏ-i′-dēs
Di-os′-pyr-os*
Dĭ-o′-tis
Dip-ca′-di
dip-et′-al-a
Diph′-ac-a
diph-yl′-la
Diph-yl-lei′-a
Diph-y′-sa*
dip-lac-anth′-a
Dip′-la-cus
Dip-la-de′-nĭ-a
dip-laz-ĭ-ŏ-i′-dēs
Dip-laz′-ĭ-um
Dip-lec′-thrum
Dip-loc′-al-yx
Dip-loch-i′-ta
Dip-loc′-om-a
Dip-lo′-dĭ-um
Dip-log-as′-tra
Dip-lol-æ′-na
Dip-lon-e′-ma
Dip′-lon-yx
Dip-lop-ap′-pus
Dip-loph-yl′-lum
Dip-lo′-sis
Dip-loth-e′-mĭ-um
Dip-od′-ĭ-um
Dip-sac′-ĕ-æ
dip-sac′-ĕ-us
Dip′-sac-us
Dip′-ter-a
Dip-ter-ac-anth′-us
Dip-ter-oc-ar′-pĕ-æ
Dip-ter-oc-ar′-pus
Dip′-ter-yx
dip-yr-e′-na
Dir′-ca
dirh′-od-a
Di′-sa
Dis-an′-dra
Dis-ar′-ren-um*
Dis-ca′-rĭ-a
Dis-chid′-ĭ-a
dis-coi′-da-lis
dis′-col-or

Dis-com-yc-e′-tēs
Dis-el′-ma
Dis-em′-ma
Dis-oc-ac′-tus
Dis-oc-ap′-nos
dis′-par
Dis′-por-um
dis-sec′-tum
dis-sĭm′-il-e
dis-sit-if-lo′-ra
dis-tach′-ŷ-a
dis-tach′-ŷ-on
dis′-tans
Dis-teg-anth′-us
dis-tich-anth′-a
dis′-tich-on
dis′-tich-um
dis-til-la-to′-rĭ-a
Dis-trep′-ta
dis′-tyl-a
Dis-tyl′-ĭ-um
Dit′-ul-a
Dĭ-u′-ris
dĭ-ur′-na
Dĭ-u-rog-lōs′-sum
di-va-ric-a′-tus
di-ver′-gens
di-ver-sif-lo′-ra
di-ver-sif-ol′-ĭ-a
di′-ves
di-vi′-sa
dix-anth′-um
Dix-i-a′-na
Do-be′-ra
Dodd′-sĭ-i
do-dec-an′-dra*
Do-dec-ath′-ĕ-on
Dodg-so′-ni
Dody-so′-nĭ-i
Dod-on-æ′-a
Dod-on-æ′-æ
Dod-on-æ′-i
Do-el-lĭ-a′-num
dol-a′-brif-or′-me
dol-ich-oc-en′-tra*
dol-ich-orh-i′-za
Dol′-ich-os
Dol-ĭ-oc-ar′-pus
Dol-lin-e′-ra
dol-o′-sum
Dom-bey′-a
Dom-bey-a′-num
Dom-bey′-ĕ-æ
dom-es′-tic-a
dom-in-gen′-sis
Dom-in-ĭ-a′-na
Dom-in′-ĭ-i
Dom-in′-ul-a
Dom-in-ŷ-a′-num
Don′-ax
Donck-el-aar′-ĭ-i
Don′-dĭ-a
Don-dĭ′-sĭ-a
Don-er-ail-en′-sis
Don′-ĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: **ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in mus*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)**

* **This word is discussed at the end of the Pronouncing Dictionary.**

Pronouncing Dictionary—*continued.*

Don-ĭ-a′-na
Don′-ĭ-i
Don-ing-ton-en′-sis
Donk-el-aar-ĭ-a′-na
Doo′-dĭ-a
Dor-coc′-er-as
Dor′-cus
Do-re′-ma
Do′-rĭ-a
Dor-man-ĭ-a′-na
*Do-ro-ni′-cum**
Dor-ste′-nĭ-a
Dor-ў-anth′-ēs*
Dor-yc′-nĭ-um
Dor-ў-op′-ter-is
Dor-yph′-or-a
Dos-si′-nĭ-a
Do′-su-a
Doth-id-ĭ-a′-cĕ-æ
Doug-las′-ĭ-a
Doug-las-ĭ-a′-na
Doug-las′-ĭ-i
Dov-as-to′-ni
Dow-ĭ-a′-na
Dow-ing′-ĭ-a
Down-ing′-ĭ-a
Dra′-ba
dra-bif-ol′-ĭ-a
Drac-æ′-a
Drac-æ′-na
Drac-æ-nop′-sis
Drac′-o*
Drac-oc-eph′-al-um
Drac-o′-nis
Drac-on′-tĭ-um
Drac-oph-yl′-lum
Drac-o′-pis
drac-un′-cul-ŏ-i′-dēs
Drac-un′-cul-us
Dra-kæ′-a
Dra-kĕ-a′-na
Dre-gĕ-a′-na
Dre′-gĕ-i
Dre-gĭ-a′-na
Dre′-gĭ-i
Drep-an-oc-ar′-pus*
drep′-an-um
Dri′-ops
Dri′-mĭ-a*
Dri′-mĭ-op′-sis
Dri-moph-yl′-lum
Dri′-mys
Dri′-mys-per′-mum
Dros′-er-a
Dros-er-a′-cĕ-æ
dros-er-ŏ-i′-dēs
Dros-oph-yl′-lum
Dru′-dĕ-i
Drum-mon′-dĭ-a
Drum-mon-dĭ-a′-na
Drum-mon′-dĭ-i
dru-pa′-cĕ-a*
Dru-pa′-cĕ-æ
dru-pa′-rum
ru-pif′-er-a
Dru′-ry-i
dry′-ad-ēs
dry-ad′-ĕ-us
Dry-an′-dra
dry-an-drŏ-i′-dēs
Dry′-as
Dry′-mo-da
Dry-mog-lōs′-sum
Dry-mo′-nĭ-a
Dry-moph-lœ′-us
Dryn-a′-rĭ-a
Dry-ob-al′-an-ōps*
dry-og′-raph-us
Dry-oph-an′-ta
Dry-op′-ter-is
Dry-os-tach′-ў-um
Dry-ot′-er-as
Dry′-pet-ēs
Dry′-pis
dub′-ĭ-a
Du-boi′-sĭ-a
Du-breu-il′-ĭ-a
Du-char′-trĕ-i
Du-chek′-ĭ-a
Du′-chol-a
Duf′-fĭ-i
Dul-cam-a′-ra
Dul′-cis
Du′-lĭ-a
Du-ma′-sĭ-a
Du-mer-il′-ĭ-a
du-me-to′-rum
Du-mor-ti-e′-ri
du-mo′-sum
Dun′-nĭ-i
Du-per′-ry-a
du-pla′-na
du′-plex
du′-plic-a′-ta
du′-ra
du-rac′-in-a
Du-ran′-ta
Du-ra′-tĭ-i
Du-rim-in′-ĭ-um
Du′-rĭ-o
du-rĭ-us′-cul-a
Du′-tra
Du-val′-ĭ-a
Du-val-ĭ-a′-na
Du-rau′-a
Dyck′-ĭ-a
Dyp′-sis
Dys-o′-da
Dys-o′-dĭ-a
Dys-soch-ro′-ma

Ĕ-ar′-in-a
Earl′-ĭ-a
Earl′-ĭ-i
Eat′-on-i
Eb-en-a′-cĕ-æ
eb-en-a′-cĕ-um
Eb′-en-us
Eb-ĕr-mai′-er-a
e-brac-tĕ-a′-tus
Eb′-ul-us
eb-ur′-nĕ-a
Ec′-æ
Ec-bal′-lĭ-um
Ec-crem-oc-ar′-pus
Ech-ar′-dĭ-a
Ech-ev-e′-rĭ-a
Ech-id′-nĭ-um
Ech-id-nop′-sis
ech-ĭ-if-lo′-ra
Ech-i-na′-cĕ-a
Ech-i-nanth′-us
Ech-i-na′-ta
ech-i-nif-or′-mis
Ech-i′-noc-ac′-tus
ech-i′-noc-ar′-pa
Ech-i′-noc-e′-rĕ-us
Ech-i-noch′-lo-a
Ech-i′-noc-ys′-tis
Ech-i′-nōps
Ech-i-nop′-sis
ech-i-nos-ep′-al-a
Ech-i-nos-per′-mum
Ech-i-nos′-tach-ys
Ech-ĭ-o-glōs′-sum
Ech′-ĭ-ŏ-i′-dēs
Ech-ĭ-op′-sis
Ech-i′-tēs
Ech′-ĭ-um
Eck-hard′-ti
Eck-lon-ĭ-a′-na
Ec′-lop-ēs
e-cor-nu′-tum
e-den′-tul-a
Edge-worth′-ĭ-a
Edge-worth′-ĭ-i
Edg-worth′-ĭ-i
Ed-rai-anth′-us
Ed-u-ar′-di
ed-u′-lĕ
Ed-war′-di
Ed-ward′-sĭ-a
ef-fu′-sus
Eg-en-olf′-ĭ-a
Eg-er-to-nĭ-a′-num
Eg-lan-te′-rĭ-a
Eg-lan-te′-rĭ-æ
Eh-ren-ber-gĭ-a′-na
Eh-re′-tĭ-a
Eh-re′-tĭ-ĕ-æ
Eich-hor′-nĭ-a
Eich-le′-ri
Ek-eb-er′-gĭ-a
El-æ-ag-na′-cĕ-æ
el-æ-ag-nif-ol′-ĭ-us
el-æ-ag-nŏ-i′-dēs
El-æ-ag′-nus
El-æ′-is
El-æ-oc-ar′-pus
El-æ-od-en′-dron
El-aph-og-lōs′-sum
El-aph-rox′-yl-on
el-as′-tic-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g. c, and ch, always hard, as, for example, g in *g*ood, c in mus*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

El′-at-e
El-at-e′-rid-æ
El-at-e′-rĭ-um
El-at-i′-nēs*
el-at-i′-num
e-la′-tĭ-or*
e-la′-tum
El-dor-a′-do
E-lec′-tra
e-lec′-tric-us
e′-leg-ans
e-leg-an-tis′-sim-a
El-em-ce-tĭ-a′-na
El-eng′-i
el-eph-an′-tip-ēs
el-eph-an′-tum
El-eph-an-tu′-sĭ-a
El-et-ta′-rĭ-a
El-eu-si′-ne
El-ich-ry′-sum
E-li′-sen-a
El-iz-ab-e′-thæ
El-la-com′-bĕ-i
El-lĕ-anth′-us
El-lem-ee′-ti
El-liot′-tĭ-a
El-liot-tĭ-a′-num
el-lip′-tic-a
El-lis′-ĭ-i
El-lob-oc-ar′-pus
El-o′-dĕ-a
el-o′-dēs
e-long-a′-tus
El-pe′-nōr
El-u-ter′-ĭ-a
el-vas′-ton-en′-sis
El-wang-er-ĭ-a′-na
El-wes′-ĭ-i
El-wor′-thĭ-i
El′-ym-us
e-mar-gin-a′-ta
Em-be′-lĭ-a
Em-both′-rĭ-um
Em-brў-op′-ter-is
E-mer-ic′-ĭ-a
Em-er-so′-ni
E′-mer-us
em-et′-ic-a
e′-min-ens
Em-o′-di
Em-me′-nan-the
Em-pet-ra′-cĕ-æ
em-pet-rif-ol′-ĭ-a
em-pet-rif-or′-mis
Em-pet′-rum
Em′-phyt-us
Em-pleu′-rum
Em-pu′-sa
En-ar′-gĕ-a
en-cel-lĭ-ŏ-i′-dēs
En-ceph-al-ar′-tos
En-cy′-clĭ-a
En′-der-a
En-di′-vĭ-a
End-lich-e-rĭ-a′-na
en-doch′-ar-is
En-dop-i′-sa
En-dre′-sĭ-i
En′-dros-is
en-e-mid-oph′-or-um
En-e′-mĭ-on
En-gel-man′-ni
Enk-ĭ-anth′-us
en-nĕ-aph-yl′-la
e-no′-dis
E-no′-dĭ-um
en′-sa-ta
En-se′-te
en-sif-ol′-ĭ-a
en-sif-or′-mis
En-ta′-da
En-tel-e′-a
en-tom-or-rhi′-za
E-o-me′-cōn
E-o-pep′-ōn
ep-ac-rid′-ĕ-a
Ep-ac-rid′-ĕ-æ
ep-ac′-rĭ-ŏ-i′-dēs
Ep′-ac-ris
Ep-ei′-ra
Eph-ed′-ra
eph-ed-rŏ-i′-dēs
Eph-e′-mer-um
Eph-ip′-pĭ-um
Ep-ic-ar-pu′-rus
Ep-id-en′-drĕ-æ
Ep-id-en-drŏ-i′-dēs
Ep-id-en′-drum
Ep-ig-æ′-a
Ep-ig-yn′-ĭ-um
Ep-il-i′-num
Ep-il-ob′-ĭ-um
Ep-im-e′-dĭ-um
Ep-ip-ac′-tis
Ep-iph′-or-a
ep-ip′-ter-a
Ep-iph-yl′-lum
Ep-ip-rem′-num
Ep-is′-cĭ-a
Ep-is-teph′-ĭ-um
Ep-ith′-ym-um
Ep-rem-ēs′-nil-ĭ-a′-num
eq-ues′-tris
eq-ui′-na
Eq-uis-e-ta′-cĕ-æ
Eq-uis-e′-ti
eq-uis-e′-tif-ol′-ĭ-a
Eq-uis-e-tin′-ĕ-æ
Eq-uis-e′-tum
Er-ag-ro′-stis
E-ran′-them-um
Er-an′-this
Erb-li′-chĭ-a
Er-cil′-la
Er-de′-lĭ-i
er-e-cif-ol′-ĭ-a
e-rec′-ta
Er-em-baul′-ti
Er-e′-mĭ-a*
er-e-mic′-ol-a
er-e-mi′-ta
Er-e-moph′-il-a
Er-e-mos-tach′-ys
Er-e-mu′-rus
Er′-ĭ-a*
er-ĭ-anth′-a
er-ĭ-an-the′-ra
Er-ĭ-anth′-us
Er-i′-ca*
Er-i-ca′-cĕ-æ
er-i′-cæ-fol′-ĭ-a
er-i′-cif-ol′-ĭ-a
Er-i′-cin-el′-la
er-ic′-ŏ-i′-dēs
E-rig′-er-ōn*
E-rin-a′-cĕ-a*
Er-i′-nĕ-um*
er-i′-nŏ-i′-dēs
Er-i-nos′-ma
Er-i′-nus
Er-ĭ-ob-ot′-rў-a
Er-ĭ-ob-ul′-bæ
Er-ĭ-oc-al′-lĭ-a
Er-ĭ-oc-am′-pa
er-ĭ-oc-ar′-pa
Er-ĭ-oc-ar′-pha
er-ĭ-oc-ar′-pon
Er-ĭ-oc-au′-lon
Er-ĭ-oc-au-lo′-nĕ-æ
er-ĭ-oc-eph′-al-a
Er-ĭ-och-i′-lus
Er-ĭ-oc-ne′-ma
Er-ĭ-oc′-om-a
Er-ĭ-od-en′-dron
Er-ĭ-og′-on-um
Er-ĭ-og-yn′-ĭ-a
Er-ĭ-ol-æ′-nĕ-æ
Er-ĭ-op-ap′-pus
Er-ĭ-oph′-or-um
Er-ĭ-oph-yl′-lum
Er-ĭ-op′-sis
Er-ĭ-os-e′-ma
Er-ĭ-os-per′-mum
Er-ĭ-os-te′-mōn
Er-ĭ-os′-tom-um
Er-iph-i′-a
Er-is-y′-phe
Er-is-y′-phĕ-æ
Er-ith′-al-is
Er-it-rich′-ĭ-um
er-min-i′-num
Er-no′-dĕ-a
Er-od-en′-dron
Er-o′-dĭ-um
e-ro′-sa
Er-o′-tĕ-um
Er-pet′-ĭ-on
er-ra′-tic-a
e-rub-es′-cens
Er′-vum
E-ryng′-ĭ-um
Er-ys′-im-um
Er-ys-i′-phe*
Er-ys-i′-phe′-æ
Er-yth-e′-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′: ā as in ps*ā′*-lmist: ĕ as in sl*ĕ*n′-der: ē as in v*ē′*-ined: ĭ as in th*ĭ*n: ī as in mach-*ī′*-nist: ŏ as in r*ŏ*t′-ten; ō as in v*ō′*-ter: ŭ as in pow′-er-f*ŭ*l: ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei. as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

*** This word is discussed at the end of the Pronouncing Dictionary.**

Pronouncing Dictionary—*continued.*

Er-yth-ræ′-a
Er-yth-ri′-na
er-yth-roc-ar′-pum
er-yth-roc-eph′-al-us
Er-yth-roch-æ′-te
Er-yth-roch-i′-ton
Er-yth-rod′-an-um
Er-yth-ro′-dēs
Er-yth-rol-æ′-na
er-yth-ron-e′-ma
Er-yth-ro′-nĭ-um
er-yth-roph-æ′-a
Er-yth-roph-lœ′-um
er-yth-rop′-od-a
er-yth-rop′-ter-us
er-yth′-rop-us
er-yth-ror′-ach-is*
Er-yth-ror′-chis
Er-yth-rorh-i′-za
er-yth-ros-o′-rum
er-yth-ros-tic′-tum
Er-yth-ro′-tis
er-yth-rox-anth′-um
Er-yth-rox-yl′-ĕ-æ
Er-yth-rox′-yl-on
Es-cal-lo′-nĭ-a
Es-cal-lo′-nĭ-æ
Es-che′-rĭ-a
Esch-scholtz′-ĭ-a
es-cul-en′-ta
E′-scul-us
Es-mer-al′-da
Es-pel-e′-tĭ-a
Es-tra′-dæ
e-strĭ-a′-tus
Eth-an′-ĭ-um
Et-rus′-ca
e-tu-ber-o′-sum
Eu-ad-e′-nĭ-a
Eu-cal-yp′-tus
Eu-chæ′-tis
Eu-char-id′-ĭ-um
Eu′-char-is
Eu-chi′-lus
Eu-chlæ′-na
Eu-chro′-ma*
Eu-cle′-a
Eu-cni′-de*
Eu-co-do′-nĭ-a
Eu′-com-is
Eu-cros′-ĭ-a
eu-cros-ĭ-ŏ-i′-dēs
Euc-ryph′-ĭ-a
Eu-des′-mĭ-a
Eu′-dol-on
Eu-ge′-nĭ-a
Eu-ge′-nie
eu-ge-nĭ-ŏ-i′-dēs
eu-glōs′-sa
Eu-lal′-ĭ-a
Eu-loph′-ĭ-a
eu′-loph-um
Eu-nar-cis′-sus
Eu-nom′-ĭ-a
Eu-o′-nym-i
Eu-o′-nym-us*
Eu-os′-ma
Eu-pæ-cil′-ĭ-a
eu-pat-or′-ĭ-ŏ-i′-dēs
Eu-pat-or′-ĭ-um
eu-phleb′-ĭ-a*
Eu-phor′-bĭ-a
Eu-phor-bĭ-a′-cĕ-æ
Eu-phras′-ĭ-a
Eu-phras′-ĭ-ĕ-æ
Eu-plex-op′-ter-a
Eu-pod′-ĭ-um
Eu-pœ-cil′-ĭ-a
Eu-po-ma′-tĭ-a
Eup′-ter-yx
eu-ro-pæ′-a
Eu′-rў-a
Eu′-rў-ăl-e
Eu-rў-an′-dra
Eu-ryb′-ĭ-a
Eu-ryc′-lēs
Eu-ryc-li′-ne
Eu-ryg-an′-ĭ-a
eu-rў-ŏ-i′-dēs
Eu′-rў-ōps
Eu′-scaph-is*
Eu-sel-a′-gin-el′-la
eu-so′-rum
Eu-steg′-ĭ-a
Eu-steph′-ĭ-a
Eu′-stom-a
Eu′-streph-us
Eu′-styl-is
Eu-tax′-ĭ-a
Eu-ter′-pe
Eu′-thal-ēs
Eu′-toc-a
Eu-u′-ra
eux-an′-thin-um
Eu-xen′-ĭ-a
E-val-la′-rĭ-a
Ev-ans′-ĭ-a
Ev-ans-ĭ-a′-nus
e-vec′-tum
Ev-el-y′-na
E-vol′-vul-us
Ew-er-ĭ-a′-na
Ew-ers′-ĭ-i
Ex′-ac-um
ex-al-ta′-ta
ex-as-per-a′-tum
Ex-cæ-ca′-rĭ-a
ex-cav-a′-tum
ex-cel′-lens
ex-cel′-sa
ex-ci′-sa
ex-cla-ma′-tĭ-o′-nis
ex-cul′-ta
ex-ig′-ŭ-a
ex-im′-ĭ-a
Ex-it-e′-lĭ-a
ex-it-ĭ-o′-sum
Ex-o′-as-cus
Ex-o′-car-pus
Ex-o′-chor-da
Ex-o-gon′-ĭ-um*
ex-ol-e′-ta
ex-on-ĭ-en′-sis
ex-o-rhi′-za
ex-or-na′-ta
Ex-o-stem′-ma
Ex-o-thos-te′-mon
ex-o′-tic-a
ex-pan′-sum
ex-sca′-pa
ex-sculp′-ta
ex-sec′-tum
ex-ser′-ta
ex-sur′-gens
ex-ten′-sum
ex-tinc-to′-rĭ-a
ex-u′-dans
ex-uv-ĭ-a′-ta
Ey′-rĕ-a
Ey′-rĕ-i
Ey-rie′-sĭ-i
Ey-sen-hardt′-ĭ-a

Fab′-a
fab-a′-cĕ-a
Fab-a′-ce-æ
Fab-a′-go
Fab-ĭ-a′-na
Fab-ric′-ĭ-a
fac-e′-tum
Fad-yen′-ĭ-a
Fad-yen′-ĭ-i
Fa-ga′-ra
Fa-gel′-ĭ-a
Fa′-gi
fa-gif-ol′-ĭ-a
fa-gin′-e-a
Fa-gop-y′-rum
Fay-ra′-a
Fa′-gus
Fair-ie-a′-na
fal-ca′-ta
fal-cif-ol′-ĭ-a
fal-cif-or′-me
fal-cin-el′-lum
Fal-con-e′-ra
Fal-con-e′-ri
Fal-ken-ber′-gĭ-i
Fal′-kĭ-a
falk-land′-ic-um
fal′-lax
Fal-lu′-gĭ-a
Far-a′-mĕ-a
Far′-far-a
Far-fu′-gĭ-um
far-i-na′-cĕ-a
far-i-nif′-er-a
far-i-no′-sa
Far-ley-en′-sĕ
Far′-mer-i
Far-ne-sĭ-a′-na
Far′-rer-æ
Far-se′-tĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′: ā as in p*ā*′-lmist; ĕ as in sl*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*ŏt*′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in mu*sc*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

fas-cel-i′-na
fas-cĭ-a′-ta
fas-cic-ul-a′-ris
fas-cic-ul-a′-ta
fas-cin-a′-tor
fas-ti-gĭ-a′-ta
fas-tu-o′-sa
Fat-ræ′-a
Fat′-sĭ-a
Fau-con-ne′-ti
fav′-id-um
fav-o′-sa
feb-rif′-ug-um
Fe′-dĭ-a*
Fedt-schen′-kŏ-i
Fe′-ĕ-a
Fe′-ĕ-i
fe-je-en′-sĕ
Fe-lic′-ĭ-a
fe-li′-na
fel-os′-ma
Fend′-ler-i
fen-es-tra′-lis
fen-es-tra′-tum
fen-es-trel′-la
fen′-nic-a
Fen-u′-sa
Fenz′-lĭ-a
Fenz-lĭ-a′-na
Fenz′-lĭ-i
Fer-din-an′-da
Fer-ei′-rĭ-a
Fer-gus-so′-ni
Fer-nan′-dæ
Fer-nand-e-sĭ-a′-num
Fer-nan-de′-zĭ-a
Fer-ne′-lĭ-a
fer-o-ci-s′-sim-us
Fe-ro′-nĭ-a
fer′-ox
Fer-ra′-rĭ-a
Fer-ra′-rĭ-ol-a
fer′-rĕ-a
Fer′-rĕ-ol-a
fer-rĭ-e′-ren-sĕ
fer-ru-gin′-ĕ-a
Fer′-ul-a
fer-ul-æ-fol′-i-a
Fer-ul-a′-go
fes-ti′-va
Fes-tu′-ca
Feu-il-læ′-a
Feu-il′-lĕ-i
Fev-il′-lĕ-a
Fi-bril-la′-rĭ-a
fi-bro′-sa
Fi-ca′-rĭ-a
fi-cif-ol′-ĭ-a
fi-cŏ-i′-dĕ-a
Fi-cŏ-i′-dĕ-æ
Fi′-cus
Fi-do′-nĭ-a
Field′-ĭ-a
Field′-ĭ-æ
Field-ing′-ĭ-i
fi-jen′-sis
fi-lam-en-to′-sa
fi-la′-rĕ
Fildes′-i
fi-lic-au′-lis
Fil′-ic-ēs*
fil-ic-if-ol′-ĭ-a
fil-ic-i′-na
fil-ic-ŏ-i′-dēs
Fil-ic′-ul-a
fi-lif′-er-a
fi-lif-ol′-ĭ-um*
fi-lif-or′-mis
Fi-lip-en′-dul-a
fi-lip-en′-dul-if-ol′-ĭ-um
Fi′-lip-ēs
Fil′-ix-fœ′-min-a
Fil′-ix-mas′
fim′-brĭ-a
Fim-brĭ-a′-rĭ-a
fim-brĭ-a′-ta
Find-ley-a′-num
Fin-ed-on-en′-sis
fir′-ma
fir-ma′-ta
Fis-che′-ra
Fis-che′-ri
Fis-che′-rĭ-a
Fis-che′-rĭ-a′-na
Fis-se′-nĭ-a
fis-sif-ol′-ĭ-a
Fis-sil′-ĭ-a
fis′-sum
Fis-tul-i′-na
fis-tul-o′-sa
Fit-to′-nĭ-a
Fitz-ger-al′-di
Fitz-roy′-a
fla-bel-la′-ta*
fla-bel-lif-ol′-ĭ-um
fla-bel-lif-or′-mis
fla-bel-lul-a′-ta
flac′-cid-a
Flac-our′-tĭ-a
Flac-our′-tĭ-ĕ-æ
flag-el-la′-ris*
flag-el-la′-ta
flag-el-lif′-er-um
flag-el-lif-or′-mis
flag-el′-lum
flam′-mĕ-a
Flam′-mul-a
fla′-va*
fla′-vens
fla′-vĕ-ol-um
Fla-ve′-rĭ-a
fla-ves′-cens
fla-vic′-om-a
fla′-vid-us
fla-vis-pi′-na
fla-vis′-sim-um
fla-vo′-sum
fla′-vus
Flem-ing′-i
flex′-il-is
flex′-um
flex-ŭ-o′-sa
Flin-der′-sĭ-a
floc-co′-sa
flo-ra′-lis
flo′-re-al′-bo
flo-ren-ti′-na
flo′-re-ple′-no
flo-ri-un′-da
flo-ric′-ol-a
flo′-rid-a*
*flor-id-a′-num**
flor-id-en′-sis
Flörk-ĭ-a′-na
flo-rul-en′-ta
Flos-cuc-u′-li
flos-cul-o′-rum
Flueg′-gĕ-a
Flüg′-gĕ-a
flŭ′-ĭt-ans
fluv-ĭ-a′-til-is
fœ′-min-a
fœ-min′-ĕ-a
fœ-nic-ul-a′-cĕ-um
Fœ-nic′-ul-um
fœ-nis-ec′-ĭ-i
Fœ′-num-Græ′-cum
Fœt-at-ax′-us
fœt′-id-a
Fœt-id′-ĭ-a
fœt-id-is′-sim-a
fol′-ĭ-i*
fol′-ĭ-is-au′-rĕ-is
fol-ĭ-ol-o′-sa
fol-ĭ-o′-sa
fol-lic-ul-a′-ris
Fon-tan-e′-sĭ-a
Fon-tan-e′-sĭ-a′-na
Fon-tan-e′-sĭ-i
fon-ta′-num
Fon-tin-a′-lis
Foot′-i
Forbes-ĭ-a′-num
Forbes′-ĭ-i
Ford′-ĭ-i
for-fic-a′-lis
For-fic′-ul-a
for-mi′-cæ-for′-mis
For-mi′-cid-æ
for-mo′-sa
for-mo-sa′-na
for-mo-sis′-sim-a
For-res′-tĭ-a
Fors-kol′-ĕ-i
Fors′-ter-a
Fors′-ter-i
Fors-ter-ĭ-a′-num
For-sy′-thĭ-a
For-tu′-nĕ-a
For-tu-nĕ-a′-na
For-tu′-nĕ-i
fos-sul-a′-tus
Foth-er-gil′-la
Foth-er-gil′-lĭ-a
Foth-er-gil′-lĭ-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā*′-lmist; ĕ as in sl*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist: ŏ as in r*ŏ*t′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

foth-er-gil-lŏ-i′-dēs
Fou-qui-e′-ra
Fou-qui-e′-rĕ-æ
Four-croy′-a
Four-nĭ-e′-ri
fov-ĕ-a′-rum
fov-ĕ-a′-tum
Fov-ĕ-ol-a′-rĭ-a
Fox′-ĭ-i
frac-tif-lex′-a
Fra-ga′-rĭ-a*
fra-ga′-rĭ-ŏ-i′-dēs
fra-gif′-er-a
frag-il-if-ol′-ĭ-a
frag′-il-is
fra′-grans
fra-gran-tis′-sim-a
Fran-cis′-cĕ-a
Fran-co′-a
Fran-co′-ĕ-æ
Fran-co′-nis
Frang′-ul-a
Frank-en′-ĭ-a
Frank-en-ĭ-a′-cĕ-æ
frank-en-ĭ-ŏ-i′-dēs
Frank-lin′-ĭ-i
Fran-so-nĭ-a′-na
Fra′-ser-a
Fra′-ser-i
frax-in′-ĕ-a
Frax-in′-ĕ-æ
Frax-in-el′-la
frax-in-if-ol′-ĭ-um
frax-in-ĭ-if-ol′-ĭ-um
Frax′-in-us
Fred-er-i′-ci
Free-man′-ĭ-i
Frees′-ĭ-a
Fre-mon′-ti
Fre-mon′-tĭ-a
Fre-mon-tĭ-a′-na
Fre-mon′-tĭ-i
Fre-nel′-a
Frey-cin-e′-tĭ-a
Frez-ĭ-e′-ra
Fri-der-i′-ci-Au-gus′-ti
Fried-richs-thal′-ĭ-a
Fries′-ĭ-a
fri′-gid-a
Fris′-chĭ-i
Fris-el′-lĭ-æ
Frit-il-la′-rĭ-a
Friv-al′-dĭ-a
Frœ′-bel-i
Frœ-bel′-lĭ-i
Frœ-lich′-ĭ-a
Frol-o′-rĭ-a
Fro-lo′-vĭ-a
fron′-dĕ-a
fron-do′-sa
fruc-tig′-en-um
fruc-tip-en′-dul-a
fruc′-tu-lu′-tĕ-a
Frut-es′-ca*
frut-es′-cens
frut-e-to′-rum
frut′-ex
frut-ic-o′-sum
frut-ic-ul-o′-sum
fu-ca′-tum
*Fuch′-sĭ-a**
fuch-sĭ-æ-fol′-ĭ-a
fuch-sĭ-ŏ-i′-dēs
fu-cif-or′-mis
Fuck-el-ĭ-a′-na
fug′-ax
Fu-go′-sĭ-a
Ful-chir-o′-nĭ-a
ful′-gens
ful′-gid-a
ful-ham-en′-sis
fu-li-gin-o′-sa
Ful-lo′-num
ful-va′-ta
ful-ves′-cens
ful′-vus
Fu-ma′-go
Fu-ma′-na
Fu-ma′-rĭ-a
Fu-ma-rĭ-a′-cĕ-æ
fu-ma-rĭ-æ-fol′-ĭ-a
Fu-ma′-rĭ-ĕ-æ
fu-ma-rĭ-ŏ-i′-dēs
fu-mip-en′-nis
fu-na′-lis
Funck′-ĭ-i
fu-neb-ra′-na
fu-ne′-bris
fu-nes′-tum
Fun′-gi
fung-o′-sa
fu-nic-ul-a′-ta
Fu-nic′-ul-us
fu-nif′-er-a
Funk′-ĭ-a
Funk-ĭ-a′-num
fur′-cans
fur-ca′-tus
Fur-cræ′-a
fur′-cul-a
fur′-ens
fur-fur-a′-cĕ-a
Fur-sten-ber′-gi
Fu-sa′-rĭ-um
fus′-ca
fus-ca′-ta
fus-ces′-cens
fus′-cif-rons
fus′-co-vir′-id-is
fus′-cum
Fu-sic-lad′-ĭ-um
fu-sif-or′-mis*
Fu-sis-por′-ĭ-um
Fu-tok-ad-su′-ra
Fytch-ĭ-a′-num

Gært′-ner-a
Gært-ner-i-a′-num

Ga′-gĕ-a
Gagn-eb-i′-na
Gail-lar′-dĭ-a
Gair-ĭ-a′-num
Gal-ac′-tĭ-a*
Gal-ac-ti′-tēs
Gal-ac-tod-en′-dron
Gal-ang′-a
gal-anth-if-ol′-ĭ-us
Gal-anth′-us
Gal-at-el′-la
Gal′-ax
Gal-ax′-ĭ-a
gal-ban-if′-lŭ-a
Gal′-ban-um
Ga′-le
Gal-ĕ-an′-dra
Gal-ĕ-a′-ta
Gal-e′-dup-a
Gal-e′-ga
gal-e′-gif-ol′-ĭ-a
gal-e′-gif-or′-mis
gal-e′-gŏ-i′-dēs
Gal-ĕ-ob′-dol-on
Gal-e-og-lōs′-sum
Gal′-ĕ-ol-a
Gal-ĕ-op′-sis
Gal-ĕ-ot′-tē-i
Gal-ĕ-ot′-tĭ
Gal-ĕ-ot′-tĭ-a
Gal-ĕ-ot-tĭ-a′-na
gal-e′-ric-ul-a′-ta
Gal-ĭ-a′-cĕ-æ
Gal-in-so′-gĕ-a
gal-ĭ-ŏ-i′-dēs
Gal-ip-e′-a
Gal′-ĭ-um
gal-la′-rum
gal′-li
gal′-lic-a
gal-lic′-ol-a
gal-lic-ŏ-i′-dēs
Gal′-lĭ-i
*Gal-phi′-mĭ-a**
Gal-to′-nĭ-a
Gal-va′-nĭ-a
Gam′-bĭ-er
gam-bo′-sus
Gam′-ma
Gam-mie-a′-na
Gam-och′-lam-ys
gan-dav-en′-sis
gan-dĭ-en′-sis
gan-glĭ-o′-nif-or′-mis
Gan-ym-e′-dēs
gan-ym-e′-dŏ-i′-dēs
Gar-ci-a′-na
Gar-ci′-nĭ-a
Gar-de′-ni
Gar-de′-nĭ-a
gar-de-ni-ŏ-ĭ′-dēs
Gard′-ner-i
Gard-ner-i-a′-na
Gard-ner′-ĭ-i
Gar-do′-qui-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭ*n; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ȳ as ĭ; ў as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in mu*sc*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

gar-gan′-ic-a
Gar-gan′-tŭ-a
Gar-id-el′-la
gar-ĭ-ep′-in-um
Gar-nĭ-e′-rĭ-a′-na
Gar-rex-ĭ-a′-na
Gar′-rў-a
Gar-rў-a′-cĕ-æ
Gar-u′-ga
Ga-sip′-ă-és
Gas-kel-lĭ-a′-na
Gas-te′-rĭ-a
Gas-to′-ni
Gas-to′-nĭ-a
Gas-troc-ar′-pha
Gas-tro′-dĭ-a
Gas-trol-ob′-ĭ-um
Gas-trom-er′-ĭ-a
Gas-tron-e′-ma
Gau-dich-au′-dĭ-a
Gau-dich-au-dĭ-a′-num
Gau-dich-au′-dĭ-i
Gaul-the′-rĭ-a
Gau′-ra
Gaus′-sĭ-a
Gau-tĭ-e′-ri
Gay′-a
Gay-a′-num
Gay-lus-sa′-cĭ-a
Ga-za′-nĭ-a
Ge-as′-ter
Geb-an′-ga
geb-el′-ĭ-a
Geb-le′-ra
Ge-er′-ĭ-a
ge-if-ol′-ĭ-a
Geis-so′-is
Geis-som-er′-ĭ-a
Geis-sŏ-rhi′-za
Gel-as-i′-ne
gel′-id-a
Gel-o′-nĭ-um
Gel-sem′-ĭ-ĕ-æ
Gel-sem′-ĭ-um
gem-in-a′-ta*
gem-in-if-lo′-ra
gem′-ma
gem′-mæ
gem-ma′-ta
gem-mif′-er-a
gem-mip′-ar-a
gem-on-en′-sĕ
Gen-dar-us′-sa
Gen-et-yl′-lis
gen-e-ven′-sis
gen-ic-ul-a′-ta
Gen-i′-pa
Gen-is′-ta
gen-is-tæ-fol′-ĭ-a
gen-is-tif-ol′-ĭ-a
gen-is-tŏ-i′-dēs
Genk′-wa
Gen-os-i′-ris
Gen-tĭ-a′-na
Gen-tĭ-a′-næ
Gen-tĭ-a-nel′-la
gen-tĭ-a-nŏ-i′-dēs
gen-ti′-lis
Ge-od-o′-rum
Geof-fræ′-a
Geof-froy′-a
Geof-froy′-i
ge-ŏ-i′-dēs
gĕ-o-met′-ric-a
Gĕ-o-met′-rin-a
Gĕ-o′-nom-a
gĕ-o-nom-if-or′-mis
Gĕ-oph′-il-us
Gĕ-or′-ch-is
geor-gĭ-a′-na
Geor-gi′-na
Ge-ot-ru′-pēs
Ger-an-ĭ-a′-cĕ-æ
ger-an-ĭ-æ-fol′-ĭ-a
ger-an-if-ol′-ĭ-a
ger-an-ĭ-ŏ-i′-dēs
Ger-an′-ĭ-um*
Ger-ar′-dĭ-a
Ger-ar-dĭ-a′-na
Ger-ar′-dĭ-ĕ-æ
Ger-as-can′-thus
Ger-be′-rĭ-a
Ger-da′-rĭ-a
Ger-mai′-nĭ-i
Ger-ma′-nĕ-a
ger-ma′-nic-a
Ger-ol-tĭ-a′-na
Ger-op-o′-gŏn*
Ger-rar′-dĭ
*Ges-ne′-ra**
Ges-ne-ra′-cĕ-æ
ges-ne′-ræ-flo′-ra
Ges-ne′-rĭ-a
Ges-ne′-rĭ-a′-na
Ges-ne′-rĭ-a′-næ
ges-ne-rŏ-i′-dēs
Ge-thyl′-lis
Ge-thy′-ra
Ge′-um
Gheis-bech′-tĭ-i
Ghel-linck′-ĭ-i
Ghies-bregh-tĭ-a′-na
Ghies-bregh′-tĭ-i
Ghi′-nĭ-a
gib′-ba
gib-ber-o′-sa
gib-bif-lo′-ra
gib-bo′-sum
Gibbs-ĭ-a′-na
gib-ral-tar′-ic-a
Gib-son′-ĭ-i
Gig-ant-ab′-ĭ-ēs
gig-ant-e′-um
gĭg-ant′-ic-a
gig′-as
Gil-bert′-ĭ-a
Gil-bert′-ĭ-i
Gil′-bey-i
Gil′-ĭ-a
Gil-le′-nĭ-a
Gil-les′-ĭ-i
Gil-lies′-ĭ-a
Gil-lies′-ĭ-i
Gil′-lĭ-i
Gin-gin′-sĭ-a
Gink′-go
Gin-nal′-la
Gi-re-ou-dĭ-a′-na
Gith-a′-go
glab-el′-la*
glab′-er
glab-er′-rim-a
glab′-ra
glab-ra′-ta
glab-res′-cens
glab-ric′-ol-lis
glab-rĭ-us′-cul-us
glac-ĭ-a′-lis
glad-ĭ-a′-ta
glad′-ĭ-ol-if-lo′-ra
Glad′-ĭ-ol-us*
glan′-dĭ-um
glan-dul-if′-er-a
glan-dul-ig′-er-a
glan-dul-o′-sa
Glas-i-o′-vĭ-i
glast-if-ol′-ĭ-a
glau′-ca
glau′-ces-cens
glau-cif-ol′-ĭ-a
glau-cĭ-if-ol′-ĭ-um
glau′-cin-um
Glau′-cĭ-um
glau-coph-yl′-la
Glaux
Glaz-ĭ-o′-va
Gle-cho′-ma
Gled-its′-chĭ-a
Gled-it′-sĭ-a
Glehn′-ĭ-i
Glei-che′-nĭ-a
Glei-che-nĭ-a′-cĕ-æ
Glob′-ba
glob-if′-er-um
glob-if-lo′-rum
glob-o′-sa
Glob-ul-a′-rĭ-a
glob-ul-a-rĭ-æ-fol′-ĭ-um
Glob-ul-a′-rĭ-ĕ-æ
glob-ul-a′-ris
Glob-ul-e′-a
glob′-ul-i
glob-ul-if′-er-a
glob-ul-o′-sa
Glœ-os-por′-ĭ-um
glom-er-a′-ta
Glon-er′-ĭ-a
glo′-rĭ-a
Glo-rĭ-o′-sa
glo-rĭ-o-sŏ-i′-dēs
glo-rĭ-o′-sum
Glōs-san′-thus*
Glos′-sar-rhēn
Glōs-sas′-pis
Glōs-soc-om′-ĭ-a

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* **This word is discussed at the end of the Pronouncing** Dictionary.

Pronouncing Dictionary—*continued.*

Glŏs-so′-dĭ-a
glŏs-som-ys′-tax
Glŏs′-sul-a
Glŏt-tid′-ĭ-um
Glox-in′-ĭ-a
glox-in-ĭ-æ-flo′-ra
glox-in-if-ol′-ĭ-us
glu-ma′-cĕ-a
glu-tin-o′-sa
Glyc-er′-ĭ-a
Glyc′-in-e
glyc-in-if-ol′-ĭ-a
Glyc-os′-mis
glyc-yph-yl′-los
Glyc-yr-rhi′-za*
Glym′-ĭ-i
Glyph-æ′-a
Glyph-os-per′-ma
Glyp-tos′-trob-us
Gmel-i′-na
Gmel-i′-ni
gnaph-al-ĭ-ŏ-i′-dēs
Gnaph-al′-ĭ-um
Gne-ta′-cĕ-æ
Gni′-dĭ-a
God-e′-tĭ-a
God′-oy-a
God-win′-ĭ-a
Goe-bel′-ĭ-i
Gŏ-er′-ĭ-us
Goe′-thĕ-a
gog-o-en′-sis
Gold-fus′-sĭ-a
Gol-die-a′-na
Gol′-die-i
Gom′-phĭ-a
Gom-phol-ob′-ĭ-um
Gom-phos′-tyl-is
Gom-phre′-na
Gon-at-anth′-us
gon-at-o′-dēs
Gon-at′-op-us
Gon′-gon-ha
Gong-o′-ra
gong-yl-o′-dēs
Go-nĭ-oph-leb′-ĭ-um
Go-nĭ-op′-ter-is
Go-noc′-al-yx
Go-nol′-ob-us
Go-nos-te′-mōn
Good-en-o′-vĭ-ĕ-æ
Good′-ĭ-a
Good′-yer-a
Gor-do′-nĭ-a
Gor-do′-nĭ-a′-nus
Gor-in′-gĭ-a′-num
Gos-syp′-ĭ-um
Goth-of-re′-da
Gott-schal′-ckĕ-i
Gou-a′-ni
Gou-a′-nĭ-a
Gou-do′-tĭ-i
Gov-e′-nĭ-a
Gov-e′-nĭ-a′-na
Gov-in-do′-vĭ-a
Gow′-er-æ
Gow-er′-ĭ-i
Grab-ow′-skĭ-a
Grac-il-a′-rĭ-a
grac′-il-ĕ
grac-il-en′-ta
grac-il-ic-or′-nis
Grac-il′-im-a
grac-il-li′-na
græ′-ca
Græf′-fĕ-i
Græf′-fer-i
Græll′-sĭ-i
Gra′-ham-i
Gra-ham-ĭ-a′-na
Gra-min′-ĕ-æ
gra-min′-ĕ-us
gra-min-if-ol′-ĭ-a
gra′-min-is
Gram-man′-gis
Gram-man′-thēs
Gram-mat-oc-ar′-pus
Gram-mat-oph-yl′-lum
Gram-mi′-tis
gram-un′-tĭ-a
gran-a-den′-sis
Gra-na′-rĭ-us
gran-a-ten′-sĕ
Gra-na′-tum*
gran′-dĕ
gran′-dic-eps
gran-dic-us′-pis
gran-did-en-ta′-ta
gran-dif-lo′-ra
gran-dif-ol′-ĭ-a
gran-dif-or′-mis
gran-din-o′-sa
gran-dip-le′-nus
gran-dip-unc-ta′-ta
gran′-dis
Gran′-tæ
Gran′-tĭ-i
gra-nul-a′-ta
gra-nul-o′-sa
Gra′-num
Graph-ol′-ith-a
Grap-toph-yl′-lum
gra′-ta
Gra′-tĭ-ol-a
Gra-tĭ-ol′-ĕ-æ
gra-tĭ-o′-sa
gra-tĭ-o-sis′-sim-um
gra-tis′-sim-a
grav′-ĕ-ol-ens
Graves′-ĭ-a
Gray′-i
Green-ĭ-a′-na
Green′-ĭ-i
Green-o′-vĭ-a
Greg′-gĭ-i
Greg-or′-ĭ-a
Greg-or′-ÿ-i
Greig′-i
Greig′-ĭ-a
Greig′-ĭ-i
Gren-vil′-lĕ-a
Gren-vil′-lĕ-æ
Grev-il′-lĕ-a
Grev-il-lĕ-a′-na
Grev-il′-lĕ-i
Grew′-ĭ-a
grew-ĭ-æ-flo′-ra
grew-ĭ-ŏ-i′-dēs
Grey-a′-na
Grey′-ĭ-a
Gri′-as
Grie′-vĕ-i
Grif-fin′-ĭ-a
Grif-fin′-ĭ-i
Grif-fith-ĭ-a′-na
Grif-fith′-ĭ-i
Grin-de′-lĭ-a
Grise-bach′-ĭ-a
Grise-bach-ĭ-a′-na
Gri-sel-i′-nĭ-a
Gris′-le-a
Gro′-bÿ-a
Gro′-bÿ-i
Gron-o′-vĭ-a
gros-sil-ab′-ris
Gros-sul-a′-rĭ-a
Gros-sul-a′-rĭ-a′-cĕ-æ
Gros-sul-a′-rĭ-æ
gros-sul-a′-rĭ-æ-fol′-ĭ-a
gros-sul-a-rĭ-a′-ta
Grub′-bĭ-a
Gryl′-lid-æ
Gryl-lo-tal′-pa
Gryl′-lus
Gu-a′-co
guad-al-u-pen′-sis
Guag-neb-i′-na
Gua′-ĭ-ac-um
Gual-the′-rĭ-a
Gua-pe′-ba
Gua′-re-a
gua-rŏ-i′-dēs
gua-tem-a-len′-sĕ
Guat-te′-rĭ-a
Gua′-va
Gua-zu′-ma
Guet-tār′-da
Gue-vi′-na
gui-a-nen′-sis
Gui-chen-o′-tĭ-a
Guil-an-di′-na
Guil-foy′-lĕ-i
Guil-ĭ-el′-ma
Guil-ĭ-el′-mĭ
guin-ĕ-en′-sis
Gui-zo′-tĭ-a
Gul-den-stad-tĭ-a′-na
gum′-mif-er
gum-mif′-er-um
Gun-del′-ĭ-a
Gun-del-sheim-er′-ĭ-a
*Gun-ne′-ra**
Gun-ne-ra′-cĕ-æ
Gun′-nĭ-a
Gun-nĭ-a′-na

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*u′*-ler; ў as ĭ; ȳ as ī; æ. œ, ei, as *ai* in p*ain*: au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Gun′-nĭ-i
Gun-nis-o′-ni
gur-wal′-ic-um
Gus-so-nĭ-a′-na
Gus-ta′-vi
Gus-ta′-vĭ-a
Guth-rie-a′-na
Gut-ĕ-er-re′-zĭ-a
gut′-ta
gut-ta′-ta
Gut-tif′-er-æ
gut-tul-a′-tum
guy-a-nen′-sis
Guz-man′-nĭ-a
Gym-nad-e′-nĭ-a
gym-nan′-tha
Gym-ne′-ma
gym-noc-ar′-pa
Gym-noc′-lad-us
Gym-nog-ram′-me
Gym-nol-o′-mĭ-a
Gym-nop′-sis
Gym-nop′-ter-is
gym-nos-per-mŏ-i′-dēs
Gym-nos-por-ang′-ĭ-um
Gym-nos-tach′-ĭ-um
Gym-nos′-tach-ys
Gym-noth-e′-ca
Gym′-noth-rix
Gyn-an-dri′-ris
Gyn-an-drop′-sis*
Gyn-er′-ĭ-um
Gyn-he-te′-rĭ-a
Gyn-oc-eph′-al-a
Gyn-oph′-or-a
Gyn-op-leu′-ra
Gyn-ox′-ys
Gyn-u′-ra
Gyp-soph′-il-a
Gy-ran′-dra*
gy′-rans
gy-rob-ul′-bon
Gy-roc-ar′-pĕ-æ
Gy-ro′-mĭ-a
Gy-ros′-tach-ys
Gy-roth-e′-ca

Hau-gĕ-a′-num
Haus′-tĭ-i
Hab-e-na′-rĭ-a
Hab-er′-lĕ-a
Hab-litz′-ĭ-a
Hab-litz-ĭ-a′-na
Hab-ran′-thus
Hab-roth-am′-nus
Hack-el-ĭ-a′-na
Hac-quet′-ĭ-a
Had-e′-na
Had-wen′-ĭ-i
Hæck-er′-ĭ-a
Hæm-ad-ic′-tŷ-on
Hæm-an′-thus
Hæm-a′-rĭ-a
hæm-at-och-i′-lum
hæm-at-och′-rŏ-um
Hæm-at-ox′-yl-on
Hæm-och′-ar-is
Hæm-od-o-ra′-cĕ-æ
Hæm-od-o′-rum
hæm-or-rho-id′-al-is
Hæn′-kĕ-a
Hæn′-sler-a
Hag-æ′-a
Ha′-ger-i
Hahn′-i
Ha′-kĕ-a
ha′-kĕ-æ-fol′-ĭ-a
hal-ep-en′-sĕ
hal-ep′-pic-a
Hales′-ĭ-a
Hal-ford′-i
Hal′-ĭ-a
hal-im-if-ol′-ĭ-a
Hal-im′-ĭ-um
Hal-im-od-en′-dron
hal-ĭ-o′-tid-ĕ-a
Hal-lĕ-a′-na
Hal-le′-ri
Hal-le′-ĭ-a
Hal′-lĭ-a
Hal′-lĭ-i
hal-oph′-il-a
Hal-or-a′-gĕ-æ
Hal′-tic-a
Ham-a-lĕ-a′-na
Ham-am-e-lid′-ĕ-æ
Ham-am-e′-lis
ha-ma′-ta
Ham-el′-ĭ-a
Ham-il-to′-ni
Ham-il-to′-nĭ-a
Ham-il-to-nĭ-a′-nus
Ham-mond′-i
ha-mo′-sa
Han-bur′-ĭ-i
Han-bur-y-a′-num
Han-cor′-nĭ-a
Hands-worth-en′-sis
Han-so′-ni
Hap-loch-i′-lus
Hap-lop-ap′-pus
Hap-lop-et′-al-um
Hap-loph-yl′-lum
Har-den-ber′-gĭ-a
Har′-dĭ-i
Hard-wick′-ĭ-a
Har-i′-na
Har-lan′-dĭ-i
Har′-mal-a
Har-on′-ga
Har-pag-oph′-yt-um
Har-pal′-ĭ-um
Har′-pal-us
Har-pal′-yc-e
har-pĕ-o′-dēs
har-poph-yl′-la
Har-ra′-chĭ-a
Har-ring-to′-nĭ-a′-na
Har′-ris-i
Har-ris-ĭ-a′-na
Har-ris′-ĭ-i
Har-ris-o′-nĭ-a
Har-ris-o′-nĭ-æ
Har-ris-o′-nĭ-a′-num
Har-ry-a′-na
Hart′-ĭ-i
Hart-man′-ni
Hart-man′-nĭ-a
Hart-nel′-li
Har-tog′-ĭ-a
Hart-weg′-ĭ-a
Hart-weg-ĭ-a′-na
Hart-weg′-ĭ-i
Hart-wies-ĭ-a′-na
Har-vey-a′-na
Har-wood-ĭ-a′-num
Has-ska′-rĭ-i
has-ta′-ta
has-tif′-er-a
has-til-ab′-ĭ-um
has-tĭ′-lis
Ha-sting′-ĭ-a
Hauss-knecht′-ĭ-i
Hav-an-en′-sis
Haw′-ker-i
Haw-orth′-ĭ-a
Haw-orth′-ĭ-i
Haw-tay-nĕ-a′-na
Hay-lodg-en′-sis
Hay-nal-dĭ-a′-num
Hay′-nĭ-i
He-be-an′-dra*
he-be-car′-pum
He-be′-clad-us
He-be-cli′-nĭ-um
he-be′-gyn-um
Heb-el′-ĭ-a
Heb-en-stre′-tĭ-a
heb-ra′-ic-um
Hec-at-e′-a
Hech′-tĕ-a
he-cis′-toph-yl′-la
He-dar-o′-ma
Hed′-er-a
hed-er-a′-cĕ-a
Hed-er-a′-cĕ-æ
hed-er-æ-fol′-ĭ-um
Hed-wig′-ĭ-a
He′-dy-a*
He-dych′-ĭ-um
he-dy-os′-mum
He-dy-o′-tis
he-dys-ar-ŏ-i′-dēs
He-dys′-ar-um
He-dys′-cep-e
Hee′-rĭ-a
Hee′-rĭ-i
Hei′-mĭ-a
Hein′-sĭ-a
Hein′-tzĭ-a
Heis-te′-rĭ-a
Hek-at-er-os′-ach-ne
Hek-or-i′-ma

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ā as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ī as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Hel′-cĭ-a
Hel-dreich-ĭ-a′-nus
Hel-dreich′-ĭ-i
Hel-en′-ĭ-um
He-lĭ-ac′-zĕ-us
Hel-ĭ-am′-phor-a*
He-lĭ-anth′-em-um
he-lĭ-anth-ŏ-i′-dēs
He-lĭ-anth′-us*
He-lich′-rŏ-a
He-lich-ry′-sum
Hel-ic-o′-dĕ-a
Hel-ic-od-ic′-er-os
Hel-ic-o′-nĭ-a
hel-ic-o′-nĭ-æ-fol′-ĭ-um
hel-ic-o′-nĭ-ŏ-i′-dēs
Hel-ic-te′-rĕ-æ
Hel-ic-te′-rēs
Hel-ig′-ma
Hel′-in-us
He-lĭ-oc-ar′-pus
He-lĭ-om′-er-is
He-lĭ-oph′-il-a
He-lĭ-op′-sis
He-lĭ-oth′-rips
He-lĭ-ot-rop′-ĭ-ĕ-æ
he-lĭ-ot-rop-ĭ-ŏ-i′-dēs
He-lĭ-ot-rop′-ĭ-um
Hel-ip′-ter-um
Hel′-ix
hel-leb-or-if-ol′-ĭ-um
Hel-leb-or-i′-na
Hel-leb′-or-us*
Hel′-ler-i
Hel-ler-ĭ-a′-na
Helm-holtz′-ĭ-a
Hel′-mĭ-a
Hel-minth-os′-tach-ys
Hel-o′-nĭ-as
hel-ve′-tic-um
hel′-vol-a
Hel-wing′-ĭ-a
Hel-wing-ĭ-a′-cĕ-æ
Hel-yg′-ĭ-a
he-mer-ob-ĭ-el′-la*
He-mer-ob′-ĭ-us
He-mer-oc-al′-lĕ-æ
He′-mer-oc-al′-lis
He-mĭ-and′-ra*
He-mic-ar-pu′-rus
He-mich′-æ-na
He-mic-li′-dĭ-a
He-mid-ic′-tў-um
He-mim-er-id′-ĕ-æ
He-mim′-er-is
He-mĭ-on-i′-tēs
he-mĭ-on-i-tid′-ĕ-um
He-mĭ-on-i′-tis
He-miph-rag′-ma
He-mip′-ter-a
He-mis-ac′-ris
he-mis-phæ′-ric-a
He-mis-tem′-ma
He-mit-e′-lĭ-a
Hench-man′-nĭ-i
Hen′-der-i
Hen-der-so′-nĭ-a
Hen-der-so-nĭ-a′-num
Hen-der-so′-nĭ-i
Hen-frey′-a
Hen-ri′-cĕ-a
Hen-ri′-ci
Hen-ri′-cus
Hen-rў-a′-num
Hen′-rў-i
Hen-slo-vĭ-a′-num
hep-ar-a′-na
Hep-at′-ic-a
hep-at′-ic-æ-fol′-ĭ-a
Hep′-et-is
He-pĭ-al′-id-æ
He′-pĭ-al-us
hep-taph-il′-la
Hep-tap-leu′-rum
He-rac-le-a′-na
He-rac-le-if-ol′-ĭ-a
He-rac-le′-um
her-ba′-cĕ-a
Her′-ba-rot′-a
her-ba′-rum
her′-ba-ven′-ti
Her-ber′-ti
Her-ber′-tĭ-a
Her-ber-tĭ-a′-na
Herb′-stĭ-i
Her-ĭ-ot′-ĭ-i
Her-it-e′-rĭ-a
Her-it-ĭ-e′-ra
Her-man′-ni
Her-man′-nĭ-a
Her-man′-nĭ-ĕ-æ
her-man′-nĭ-æ-fol′-ĭ-a
Her-min-ĭ-e′-ra
Her-min-ĭ-e′-ri
Her-mi′-nĭ-um
Her′-mĭ-on-e
Her-mod-ac′-tyl-on
Her-nan-de′-zĭ-i
Her-nan′-dĭ-a
her-nan-dĭ-æ-fol′-ĭ-a
*her-nan-di*f-ol′-ĭ-a
Her-ni-a′-rĭ-a
Her-pe′-stēs
Her-pe′-stis
Her-ra′-nĭ-a
Her-re′-rĭ-a
Herr-man′-nĭ-æ
He′-sĭ-od-a
He-si-od′-ĭ-a
Hes-per-an′-tha*
hes-per-id-if-ol′-ĭ-a
Hes-per-id′-ĭ-um
Hes′-per-is
Hes-per-oc′-lēs
Hes-per-os-cor′-don
Hes′-sĕ-a
het-er-ac-an′-tha*
He-ter-ac′-tis
het-er-an′-drum
Het-er-an-the′-ra
het-er-oc-ar′-pum
Het-er-oc-en′-tron
Het-er-oc′-er-a
Het-er-och-æ′-ta
het-er-oc′-lit-a
Het-er-od′-er-a
het′-er-od-on
het-er-od-ox′-um
het-er-og-lōs′-sa
Het-er-ol-o′-ma
het-er-om-al′-lum
Het-er-om′-el-ēs
het-er-om-or′-phum
Het-er-on′-om-a
Het-er-op-ap′-pus
Het-er-oph-leb′-ĭ-um*
het-er-oph-yl′-la
Het-er-op′-ter-a
Het-er-op′-ter-ys
Het-er-os′-path-e
Het-er-os′-tal-is
Het-er-oth-e′-ca
Het-er-ot′-om-a
Het-er-ot′-rich-um
Het-er-ot′-rop-a
Heu-che′-ra
Heuf-fel′-ĭ-i
He-ve′-a
Hew-ar′-dĭ-a
Hew-it′-tĭ-a
Hex-ac-en′-tris
hex-æ-droph′-or-us
Hex-ag-lōt′-tis
hex-ag-o′-na
hex-ag-o-nop′-ter-um
hex-ap-et′-al-um
hex-as′-tich-on
hex-or′-im-a
Hey-mas′-sol-i
Hey-nĕ-a′-na
hĭ′-ans
Hib-ber′-tĭ-a
hib-er′-ni-ca
Hib-is′-cus
hĭ-er-a′-cif-ol′-ĭ-a
Hĭ-er-a′-cĭ-um
Hĭ-er-och′-lŏ-e
Hĭ-er-och-un′-tin-a
hĭ-er-og-lyph′-ic-a
Hig-gin′-sĭ-a
Hil-air-ĭ-a′-na
Hil-deb-ran′-dĭ
Hil-deb-rand′-tĭ-i
Hil-lĕ-a′-num
Hil′-lĭ-a
Hil-lĭ-a′-na
Hil′-lĭ-i
hi-ma′-lă-ic-a
hi-ma-lay-a′-na*
Him-an-tog-lōs′-sum
Him-at-an′-thus
Hinck-sĭ-a′-nus
Hind′-si-a
Hip-pé-as′-trum
Hip′-pĭ-a

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Hip′-pĭ-on
Hip-pob-ro′-mus
Hip-poc-as-tan′-ĕ-æ
Hip-poc-as′-tan-um
Hip-poc-ent-au′-rĕ-a
Hip-poc-rat-ĕ-a′-cĕ-æ
Hip-poc-re′-pis
Hip-pog-lōs′-sum
Hip-pom′-an-e
Hip-poph′-ă-e
Hip-pu′-ris
Hir-ca′-nic-um
hir-ci′-na
Hir′-cul-us
hir-su-tis′-sim-um
hir-su′-tul-a
hir-su′-tum
hir′-ta
hir-tel′-lum
hir-tif-lo′-ra
hir′-tip-ēs
his-pa′-nic-um
his′-pid-a
his-pid-is′-sim-a
his-pid′-ul-um
his-tĭ-on-anth′-a
His′-trĭ-o
his-trĭ-o′-nic-um
Hoa′-rĕ-a
Hodg-in′-sĭ-i
Hodg-so′-ni
Hodg-so′-nĭ-a
Ho-eg′-ĭ-i
Hoelt′-zer-i
Hoff-man′-nĭ-a
Hoff-man-nĭ-a′-na
Hoh-en-ber′-gĭ-a
Hoit′-zĭ-a
Hol-bœl′-lĭ-a
Holc-och-læ′-na
Hol′-cus
Hol-for-dĭ-a′-num
hol-mĭ-a′-na
Holm-ski-ol′-dĭ-a
hol-och-ry′-sum*
Hol-od-is′-cus
Hol-og-ym′-ne
Hol-ol-ach′-ne
Hol-os-chœ′-nus
hol-os-er-ic′-ĕ-um
Hol-os′-tĕ-a
Hol-ton-ĭ-a′-num
Holt′-zer-i
Hom-al-anth′-us*
Hom-al′-ĭ-ĕ-æ
Hom-al′-ĭ-um
Hom-al-om-e′-na*
Hom-al-om-y′-ĭ-a
Hom-al-on-e′-ma
Hom-e′-rĭ-a
Hom-og′-yn-e
Hom-oi-anth′-us
hom-om-al′-la
Hom-op′-ter-a
Honck-en′-ў-a
Hond-bes′-sen
Hond-en′-sis
Hood′-ĭ-a
Hoog-en-dorp′-ĭ-i
Hook′-er-a
Hook′-er-i
Hook-er-ĭ-a′-na
Hoop-es′-ĭ-i
Ho′-pĕ-a
Ho′-pĕ-i
Hop-kirk′-ĭ-a
Hop-loph′-yt-um
Hop-pe-a′-num
Hop-wood-ĭ-a′-na
Hor′-dĕ-um
hor-i′-zon-ta′-lis
Hor-kel′-ĭ-a
Hor-mi′-num
Hor′-nĕ-i
Hor-nem-an′-nĭ-a
hor′-rid-a
Hors-fall′-ĭ-i
Hors-field′-ĭ-a
Hors-field′-ĭ-i
Hors′-man-i
Hors′-man-ni
Hor-ten′-sĭ-a
hor-ten′-sis
hor-tic′-ol-a
Hos-ack′-ĭ-a
hos-mar-ĭ-en′-sis
Hos′-pit-a
Host′-a
Host′-ĕ-a
Host′-ĭ-i
Ho-tei′-a
hot-ten-tot-o′-rum
Hot-to′-nĭ-a
Houl-let′-ĭ-a
Houl-let-ĭ-a′-num
Houl-let′-ĭ-i
Hous-to′-nĭ-a
Hout′-tĕ-a
Hout-tĕ-a′-na
Hout-tuyn′-ĭ-a
Ho′-vĕ-a
Ho-ven′-ĭ-a
How-ey′-i
How-ar′-dĭ-a
How-ar′-dĭ-i
How′-ĕ-a
How-el′-lĭ-i
How-ie′-a
Hoy′-a
Hru-by-a′-num
Hud-so′-nĭ-a
Hud-so-nĭ-a′-na
Hueg-el′-ĭ-a
Hueg-el-ĭ-a′-num
Hueg-el′-ĭ-i
Hu-ern′-ĭ-a
Hug-el′-ĭ-a
Hug-el′-ĭ-i
Hugh′-ĭ-i
Hulkĕ-a′-na
Hul-let′-ti
Hul-theim′-ĭ-a
Hum-a′-ta
Hum-blo′-tĭ-i
Hum-bōldt′-ĭ-a
Hum-bōldt-ĭ-a′-na
Hum-bōldt′-ĭ-i
Hu′-mĕ-a
Hu-mĕ-a′-num
Hu′-mĕ-i
hum-if-u′-sa
hum-il-if-ol′-ĭ-a
hum′-il-is
Hu-mi′-rĭ-a
Hu-mi-rĭ-a′-cĕ-æ
Hum′-ul-us
Hun-nem-an′-nĭ-a
Hunt-ĭ-a′-num
Hunt-ley′-a
Hu′-ra
hu-ron-en′-sĕ
Hutch-in′-sĭ-a
Hut-to′-ni
hў-ac-in′-tha
Hў-ac-in-thel′-la
hў-ac-in′-thin-a
hў-ac-in′-thŏ-i′-dēs
hў-ac-in-thos′-ma
Hў-ac-in′-thus
Hy-æn-ach′-ne
hў-al′-in-a
Hў-al-op′-ter-us
Hy-ban-the′-ra
hy-ber-na′-lis
Hy-ber′-nĭ-a*
hy-ber′-nus
hyb′-rid-a
Hyd′-num
Hyd-ran′-gĕ-a*
Hyd-ran′-gĕ-æ
hyd-ran′-gĕ-æ-fol′-ĭ-a
hyd-ran′-gĕ-æ-for′-mis
hyd-ran′-gĕ-ŏ-i′-dēs
Hyd-ras′-tis
Hyd-rĭ-as-te′-le
Hyd-roc′-er-a
Hyd-roch-ar-id′-ĕ-æ
Hyd-roch′-ar-is
Hyd′-roc-leis
Hyd-roc-ot′-yl-e*
hyd-roc-ot′-yl-if-ol′-ĭ-a
Hyd-rog-lōs′-sum
Hyd-rol′-ĕ-a
Hyd-rol′-ĕ-æ
Hyd-rom-es′-tus
Hyd-rom-ys′-trĭ-a
Hyd-rop-el′-tis
Hyd-roph-yl-la′-cĕ-æ
Hyd-roph-yl′-lum
Hyd-rop-y′-rum
Hyd-ros′-tach-ys
Hyd-rot-æ′-nĭ-a
hў-em-a′-lis
Hyg-roph′-or-us
hyg-rom-et′-ric-us

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Hyl-e′-sin-us
Hy-lob′-ĭ-us
Hy-log′-yn-e
Hy-lot′-om-a
Hym-en-æ′-a*
Hym-en-an′-dra
hym-en-an′-tha
Hym-en-anth-e′-ra
Hym-en-et′-ron
Hym-en-oc-al′-lis
Hym-en-oc-ys′-tis
hym-en-o′-dēs
Hym-en-od-ic′-tў-on
Hym-en-o′-dĭ-um
Hym-en-ol-æ′-na
Hym-en-ol′-ep-is
hym-en-oph-yl-lŏ-i′-dēs
Hym-en-oph-yl′-lum
Hym-en-op′-ter-a
Hym-en-ost′-ach-ys
Hym-en-ox′-ys
Hў-oph-or′-be
Hў-os′-cy-am-us*
Hy-os′-path-e
Hyp-e′-cŏ-um
Hyp-e′-na
Hyp-er-anth-e′-ra*
hyp-er-bor′-ĕ-a
hyp-er-ic-if-ol′-ĭ-a
hyp-er-ic′-in-a
Hyp-er-ic-in′-ĕ-æ
hyp-er-ic-ŏ-i′-dēs
Hyp-er-ic-op′-sis
Hyp-er′-ic-um*
Hyp-er-og′-yn-e
hyph-æ-mat′-ic-um
Hyph-æ′-ne
hyp-nŏ-i′-dēs
Hyp-oc-al-ym′-ma*
Hyp-oc-al-yp′-tus
hyp-och-on′-drĭ-ac-us
hyp-oc-ra-te-rif-or′-mis
hyp-oc′-rit-a
Hyp-oc-yr′-ta
hyp-oc-yr-tif-lo′-rum
Hyp-od-em-at′-ĭ-um
Hyp-od-er′-ris
hyp-od-is′-cus
hyp-od′-yt-ēs
Hyp-o-es′-tēs
hyp-og-æ′-a
Hyp-og-æ′-i
hyp-og-lau′-ca
Hyp-og-lōs′-sum
Hyp-ol′-ep-is
hyp-ol-eu′-ca
Hyp-ol-yt′-rum
Hyp-om′-yc-ēs
Hyp-om-yc-e′-tēs
Hyp-on-om-eu′-ta
hyp-oph-yl′-la
hyp-oph-yl-lanth′-us
Hyp-op′-ith-ys
Hyp-ox-id′-ĕ-æ
Hyp-ox′-is

hyp-ox′-yl-on
hys-so-pif-ol′-ĭ-a
Hys-so′-pus
Hys-ter-ĭ-a′-cĕ-i*
Hys-ter-ĭ-on′-ic-a
Hys-ter′-ĭ-um
Hys-ter-oph′-or-us
Hys′-trix

Ĭ-anth′-a
Ĭ-anth′-e
ĭ-anth′-in-a
Ib-a′-tĭ-a
Ib-bet-so′-nĭ-a
ib-e′-ric-um
Ib-e′-rid-el′-la
ib-e′-rid-if-ol′ -ĭ-a
Ib-e′-ris*
Ib-id′-ĭ-um
Ib-o′-ta
Ic-a-ci′-na
Ic-a-ci′-nĕ-æ
Ic-a′-co
Ic-ar-an′-da
Ich-no-car′-pus
Ic-i′-ca
i-cos-an′-dra
ic-ter-a′-na
Ic-to′-dēs
I-dæ′-us
I-de′-sĭ-a
I-doth′-ĕ-a
I-doth-ĕ-a′-rĭ-a
Ig-na′-ti-a
ig-nes′-cens
ig′-nĕ-um
ig-nĭ-a′-rĭ-us
I′-hur
I′-lex
i′-lic-if-ol′-ĭ-a
I-lic-in′-ĕ-æ
I′-lic-is
il-ĭ-en′-sis
Il-lai′-rĕ-a
Il-lec-eb-ra′-cĕ-æ
Il-lec′-eb-rum
Il-lic′-ĭ-um
il-lin-a′-ta
il-lin′-it-um
il-lus-tra′-ta
il-lus′-tris
il-lyr′-ic-um
il-ven′-sis
Im-ant′-oph-yl′-lum
im-ber′-be
im′-bric-ans
Im-bric-a′-rĭ-a
im-bric-a′-ta
Im-hof′-ĭ-a
im-mac-ul-a′-ta
im-mer′-sa
Im-pat′-ĭ-ens*
Im-per-a′-ti

im-per-a′-tor
Im-per-a′-tric-e
im-per-a′-trix
im-per-fol-ĭ-a′-ta
im-per-ĭ-a′-lis
im-plex′-a
im-pres′-sa
Im-ray′-i
in-æ-qua′-lĕ
in-æ-qua-lif-ol′-ĭ-a
in-æ-quil-at′-er-um
in-a-ni′-ta
in-ap-er′-tum
in-ca′-na
in-car-na′-ta
In-car-vil′-lĕ-a
in-cer′-tum
in-ci′-sa
in-ci-sif-ol′-ĭ-a
in-clau′-dens
in-cli-na′-ta
in-com-par-a′-bil-is
In-com-ple′-tæ
in-comp′-ta
in-con-spic′-ŭ-us
in-cur-va′-tum
in-cur′-vum
in-den-ta′-ta
in′-di-ca
In-dig-of′-er-a
in-di-vi′-sa
in-e′-brĭ-ans
in-er′-mis
in-fes′-ta
in-fes′-tans
in-fla′-ta
in-for-tu-na′-tum
in-frac′-ta
in-fun-dib′-ul-if-or′-mis
in-fun-dib′-ul-um
Ing′-a
In-gram′-ĭ-i
In-nes′-ĭ-i
In-noc-ent′-ĭ-i
I-noc-ar′-pus*
in-od-o′-ra
i-noph-yl′-la
in-or-na′-tus
in-quil-i′-nus
in′-quin-ans
in-scrip′-ta
in-sculp′-tum
In-sec′-ta
in-sig′-nis
in-sit-it′-ĭ-a
In-sleay′-i
In-stit′-ĭ-æ
in-sua′-ve
in-tac′-ta
in-teg-er′-rim-a
in′-teg-ra
in-teg-rif-ol′-ĭ-a
in-ter-jec′-ta
in-ter-med′-ĭ-um
in-ter-rup′-tum

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā*′-lmist; ĕ as in sl*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n: ī as in mach-*ī*′-nist; ŏ as in r*ŏ*t′-ten: ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū*′-ler; ў as ĭ: ȳ as ī: æ, œ, ei, as *ai* in p*ai*n: au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

in-ter-tex′-ta
in-tra-mar-gin-a′-lis
in-tri′-ca-ta
in-tror′-sum
in-tum-es′-cens
in-tyb-a′-cĕ-us
In′-tyb-us
In′-ul-a
in-ul-ŏ-i′-dēs
in-ver′-sa
in-vi′-sum
In-vol-u-cra′-rĭ-a
in-vol-u-cra′-ta
in-vol-u′-tum
Ĭ′-o
Ĭ-och-ro′-ma
Ĭ-o-das′-ter-um
ĭ-o-nan′-tha
Ĭ-o′-ne
ĭ-o-ne′-ma
Ĭ-on-id′-ĭ-um
ĭ-on-och′-ar-is
Ĭ-on-op-sid′-ĭ-um
Ĭ-on-op′-sis
ĭ-on-oph-thal′-mum
ĭ-on-op′-ter-a
ĭ-on-os′-mum
Ĭ-os-teph′-an-e
Ip-ec-ac-ŭ-an′-ha
I-pom-e′-rĭ-a
I-pom-œ′-a
I-pom-op′-sis
Ip′-sĕ-a
ir-ap-ĕ-a′-num
Ir-by-a′-na
I-res-i′-ne
Ir-i-ar′-tè-a
I-rid′-ĕ-æ
i-rid-es′-cens
i-rid-if-lo′-ra
i-rid-if-ol′-ĭ-a
i-rid-ĭ-ŏ-i′-dēs
I′-rĭ-o
I′-ris
ir-reg-ul-a′-rĕ
ir-rig′-u-a
ir′-ro-ra′-ta
Is-ab-el-li′-na
Is-an′-dra
is-an-the′-rus
Is-a′-rĭ-a
I′-sat-is*
Isch′-ar-um
Isch′-nĭ-a
isch-noc′-er-us
Isch-yr-ol′-ep-is
I-sert′-ĭ-a
i-slan′-dic-a
Is-me′-lĭ-a
Is-mē′-ne
Is-och-i′-lus
Is′-ŏ-et-ēs
Is-ol′-ep-is
Is-ol-i′-næ
Is-ol-o′-ma
Is-ol′-oph-us
Is-om′-er-is
Is-on-an′-dra
is-op-et′-al-a
is-oph-yl′-la
Is-op-lex′-is
Is-op′-od-a
Is-op-o′-gōn
is-op-y′-rŏ-i′-dēs
Is-op-y′-rum
I-so′-ra
Is-ot′-om-a
Is-ot′-rop-is
it-al′-ic-um
I′-tĕ-a
i-væ-fol′-ĭ-a
Iv-i′-ra
I-va′-ra
ix-anth-e′-rus
Ix-an′-thus
Ix-auch′-en-us
Ix′-ĭ-a
ix′-ĭ-ŏ-i′-dēs
Ix-ĭ-ol-i′-rĭ-on
ix-ĭ-oph-yl′-la
Ix-o′-dēs
Ix-o′-dĭ-a
Ix-o′-did-æ
Ix-on-an′-thēs
Ix-o′-ra

Jab-or-o′-sa
Jab-ot-a-pi′-ta
Jab-u′-ran
Jac-ar-an′-da
jac-ĕ-ŏ-i′-dēs
Jack-ĭ-a′-na
Jack-man′-ni
Jack-so′-ni
Jack-so′-nĭ-a
Jac-ob-æ′-a
Jac-o-bĭ-a′-num
Jac-o-bin′-ĭ-a
Jac-quem-on′-tĭ-a
Jac-quem-on′-tĭ-a′-na
Jac-qui′-ni
Jac-qui′-nĭ-a
jac-qui-nĭ-æ-fol′-ĭ-a
Jaf-fray-a′-nus
Jal-am-bi′-cĕ-a
Jal-ap′-a
Jal-tom′-at-a
jam-ai-cen′-sĕ
Jam′-bos
Jam-bo′-sa
Jam-bo-sel′-la
Jame′-sì-a
Jame-sĭ-a′-num
Jame′-sĭ-i
Jame-so′-ni
Jame-so′-nĭ-a
Jam-ies-o′-ni
jan-eir-en′-sĕ
Jan-i′-pha
Jank′-æ-a
jap-on′-ic-a
Jar-rat′-tĭ-i
Jas-ĭ-o′-ne*
Jas-min-anth′-ēs
jas-min′-ĕ-a
Jas-min′-ĕ-æ
jas-min-if-lo′-ra
jas-min-ĭ-ŏ-i′-dēs
*jas-min-od-o′-ra**
jas-min-ŏ-i′-dēs
Jas′-min-um
Jat-am-an′-si
Ja-tĕ-ŏ-rhi′-za
Ja′-troph-a
ja-troph-æ-fol′-ĭ-um
Jau′-a-ri
jav-a-len′-sis
ja-van-en′-sis
ja-van′-ic-um
Jef-fer-so′-nĭ-a
Jef-fer-so′-nĭ-i
Jef′-frey-i
Jen-kens′-ĭ-i
Jen-kins′-ĭ-a
Jen-kins-ĭ-a′-na
Jen-kins′-ĭ-i
Jen-kins-o′-ni
Jen-kins-o′-nĭ-a
Jen-nings-ĭ-a′-num
Jen-nings′-ĭ-i
Jer-do′-nĭ-a
Jer-do′-nĭ-æ
Jer-do-nĭ-a′-num
Jes′-sic-æ
jez-ŏ-en′-sis
Jo-an′-nis
Joc-as′-te
Joh-an′-nis
John′-ĭ-a
John-so′-ni
John-sto′-ni
Join-vil′-lĕ-i
Jol-if′-fĭ-a
Jones′-ĭ-a
Jones-ĭ-a′-num
Jones′-ĭ-i
Jon-ghĕ-a′-na
Jon′-ghĕ-ĭ
Jon-quil′-la
jor-ul-len′-sis
Jo-se′-pha
Jo-se′-phi
Jo-se′-phĭ-a′-na
Jo-seph-i′-næ
Jo-seph-i′-nĕ-æ
Jos-ik-æ′-a
Jov-el-la′-na
Ju′-an-ul-lo′-a
Ju-a-re′-zĭ-i
Jub-æ′-a
jub-a′-ta
ju-cun′-da
Ju-glan-da′-cĕ-æ

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā′*-lmist: ĕ as in sl*ĕ*n′-der: ē as in v*ē′*-ined: ĭ as in th*ĭ*n; ī as in mach-*ī′*-nist: ŏ as in r*ŏ*t′-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭ*l: ū as in r*ū′*-ler; ў as ĭ; ȳ as ī: æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ju-glan′-dĕ-æ
ju-glan-dif-ol′-ĭ-um
Ju′-glans
jug-o′-sa
Ju′-jub-a
Ju-lĭ-a′-na
Ju-lib-ris′-sin
Jul-lĭ-a′-num
Ju′-lus
Jun-ca′-cĕ-æ
jun′-cĕ-a
Jun′-cĕ-æ
jun-cif-ol′-ĭ-um
jun-cif-or′-mis
Jun′-cus
Jung-er-man′-nĭ-a
Jung-huhn′-ĭ-i
ju-nip-er-a′-ta
ju-nip-er-i′-num
ju-nip-er-ŏ-i′-dēs
Ju-nip′-er-us
Ju-ri′-nĕ-a
Jus-sæ′-i
Jus-sĭ-æ′-a
Jus-sieu′-a
Jus-tic′-ĭ-a
juv-en′-cus

Kad-su′-ra
Kæmp′-fer-a
Kæmp′-fer-i
Kæmp-fer′-ĭ-a
Kag-en-eck′-ĭ-a
Kai′-do
Kai′-sha
Kai-et-eur′-um
Ka′-ki
Kal-an′-chŏ-e
Kal-brey′-er-i
Kal-brey′-er-ĭ-a′-na
Ka′-li
Kalm′-ĭ-a
Kalm-ĭ-a′-na
Kalm′-ĭ-i
Kal-os-anth′-ēs*
kamp-tschat′-ic-us
kam-tschat′-ic-um
Kap′-pler-i
kar-am-a′-na
Kar-a′-tas
kar-at-a′-vĭ-en′-sĕ
Kar-el-i′-ni
Kar-el-i′-nĭ-a
Kar-sten-ĭ-a′-na
Kar-sten′-ĭ-i
Kar-win-skĭ-a′-na
Kar-win′-skĭ-i
kash-mi′-rĭ-a′-na
Kath-er-i′-næ
Kat-on′-ĭ-i
Kat′-zer-i
Kauf-man-nĭ-a′-na
Kau′-ki
Kaul-fus′-sĭ-a
Kaul-fus′-sĭ-i
Kef-er-stein′-ĭ-a
Keg-el-ja′-ni
Kel-ler-man′-ni
Kel-let′-tĭ-a
Ken-drick′-ĭ-i
Ken-ned′-ў-a
Ken-ned-ў-a′-na
Kent′-ĭ-a
Kent-ĭ-op′-sis
Ken-troph-yl′-lum
Kep-pler′-ĭ-a
Ker-am-anth′-us
Ker-chov-ĕ-a′-na
Ker-chov′-ĕ-i
Ker′-ĭ-i
Ker-me-si′-na
Ker′-rĭ-a
Ker-rĭ-ŏ-i′-dēs
Kes-sel-ring′-ĭ-i
Ket-el-eer′-i
Ket-el-eer′-ĭ-a
kew-en′-sis
Keys′-ĭ-i
khas-ĭ-a′-na
khas-ў-a′-nus
khas-ў-ĭ-a′-na
Kickx′-ĭ-i
Ki-el-mey′-er-a
Ki-en-as-tĭ-a′-num
Ki-en-as′-tĭ-i
King′-ĭ-a
King-ĭ-a′-num
Kiry-an-el′-ĭ-a
Kir-il-ow′-ĭ-i
Kirk′-ĭ-i
Kit-ai-bel′-ĭ-a
Kit-ai-bel′-ĭ-i
Kit-so′-nĭ-æ
Klab-och-ĭ-a′-num
Klab-och-o′-rum
Klee′-i
Klein-hov′-ĭ-a
Klein′-ĭ-a
Klein′-ĭ-æ
Klop-stock′-ĭ-a
Klug′-ĭ-a
Knaut′-ĭ-a
Knight′-ĭ-a
Knight-ĭ-a′-na
Kniph-of′-ĭ-a
Knowl-to′-nĭ-a
Knox′-ĭ-a
Koch′-ĭ-i
Kœh′-ler-i
Kœh-ler′-ĭ-a
Koel-len-stein′-ĭ-a
Kœl-lik-er′-ĭ-a
Koel-reu-ter′-ĭ-a
Kœ′-nig-a
Kœ′-nig-i
Kok-am-ir′-ic-a
Kolb′-ĭ-i
Kol′-lar-i
Kol-om-ik′-ta
Kolp-ak-ows-ki-a′-num
Koop-man′-nĭ-i
Kop′-sĭ-a
kor-ai-a′-na
kor-ai-en′-sis
Kor-ol-kow′-i
Kor-ol-kow′-ĭ-a
Kor-sak-ow′-ĭ-i
Kor-thals′-ĭ-a
Kots-chy′-i
Kra′-mer-i
Kra-mer′-ĭ-a
Kra-mer-ĭ-a′-num
Kraus-sĭ-a′-na
Kraus′-sĭ-i
Krebs′-ĭ-i
Krel-a′-gĕ-i
Kreg-siy′-ĭ-a
Kuhl′-ĭ-a
Kuhl′-ĭ-i
Kuhn′-ĭ-a
Kunth′-ĭ-a
Kunth-ĭ-a′-na
Kunz′-ĕ-a
Kunz-ĕ-a′-na
Kunz′-ĕ-i
Kunz′-ĭ-a
Kur-roo′
Kur-roo′-a
Kus-ter-ĭ-a′-na
Kyd′-ĭ-a
Kyl-ling′-a
Kyl-ling′-ĭ-a
Kyr-tan′-thus

lab-ĭ-a′-ta
Lab-ĭ-a′-tæ
Lab-i′-chĕ-a
Lab-il-lar-dĭ-e′-ra
lab-ĭ-o′-sa
Lab-is′-ĭ-a
Lab′-lab
Lab-la′-vĭ-a
Lab′-ou-che′-rĭ-a
Lab′-ou-che′-rĭ-i
lab-ro′-sus
Lab-rus′-ca
Lab-ur′-num
Lac-æ′-na
Lac-e-pe′-dĕ-a
lac′-er-ans
Lach-au′-mĕ-i
Lach-en-al′-ĭ-a
Lach-en-al′-ĭ-i
Lach-næ′-a
Lach-nanth′-ēs
lach-nŏ-i′-dēs
lach-nop-od′-ĭ-um
Lach-nos′-tom-a
Lach′-nus
lach′-rym-a
lac-il-ĭ-a′-ta

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā*′-lmist; ĕ as in sl*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*ŏt*′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in h*ou*se; **g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian.** (For the old method, see page 276.)

* **This word is discussed at the end of the Pronouncing Dictionary.**

Pronouncing Dictionary—*continued.*

lac-in-ĭ-a′-tum
lac-in-ĭ-o′-sa
Lac-is-te′-ma
Lac-is-te-ma′-cĕ-æ
Lac-os′-tĕ-a
Lac-our′-ĭ-i
lac′-rym-ans
Lac-ta′-rĭ-a
Lac-ta′-rĭ-us
lac-ta′-tēs
lac-ta′-tus
lac′-te-um
lac-tic′-ol-or
lac-tif′-er-um
lac-tif-lo′-ra
Lac-tu′-ca
Lac-tu′-cæ
lac-tu-ca′-rĭ-us
lac-u-no′-sa
lac-us′-tris
la-dan-if′-er-us
La′-dan-um
Læ′-lĭ-a
Læ-lĭ-op′-sis
Læs-ta′-dĭ-a
læ-te′-vir-ens
læ′-tus
læ-vic-au′-lis
læ-vig-a′-ta
læ′-vĭ-or
læ′-vip-ēs
læ′-vis
læ-vĭ-us′-cul-us
Laf-ŏ-en′-sĭ-a
Lag-as′-ca
Lag-as′-cæ
Lay-asc′-ĕ-a
lag-e-næ-flo′-rus
Lag-e-na′-rĭ-a
Lag-e-noph′-or-a
La-ger-strö′-mĭ-a
La-get′-ta
Lay-ge′-ri
Lag-o′-pus*
lag-o′-tis
Lag-u-næ′-a
Lag-u-na′-rĭ-a
Lag-u′-rus
La-hay′-a
Laing′-ĭ-i
La′-is
Lal′-ag-e
Lal-ind′-ĕ-i
Lal-lem-ant′-ĭ-a
Lam-ar-chĕ-a′-na
Lam-arck′-ĭ-a
Lam-arck-ĭ-a′-na
Lam-arck′-ĭ-i
Lam-bert′-ĭ-a
Lam-bert-ĭ-a′-na
Lam-bert′-ĭ-i
la-mel-la′-ta
La-mel-lic-or′-nēs
La-mel-lig′-er-um
la-mel-lo′-sum
la-mĭ-if-ol′-ĭ-a
la-mĭ-ŏ-i′-dēs
La′-mĭ-um
Lam-ot′-tĕ-i
Lam-our-oux′-ĭ-a
Lam-pen′-ĭ-i
Lam-proc-oc′-cus
Lam-pro′-nĭ-a
Lam-py′-ris
La-na′-rĭ-a
la-na′-ta
lan-cas-trĭ-en′-sĕ
lan-cĕ-æ-fol′-ĭ-a
Lan-cĕ-a′-num
Lan′-cĕ-ŏ-la
lan-cĕ-ol-a′-rĭ-a
lan-cĕ-ol-a′-tus
lan′-cĕ-um
lan-cif-ol′-ĭ-um
Lan-dolph′-ĭ-a
Lane′-ĭ-i
Langs-dorf′-fĭ-a′-na
Langs-dorf′-fĭ-i
la′-nig-er
la-nig′-er-um
la′-nip-ēs
La-nip′-il-a
Lan-kes-te′-rĭ-a
Lans-berg′-ĭ-a
Lans-berg-ĭ-a′-na
Lans-berg′-ĭ-i
Lan-ta′-na
lan-ta-nif-ol′-ĭ-us
lan-ta-nŏ-i′-dēs
la-nu-gin-o′-sa
Lap-a-ge′-rĭ-a
Lap-ey-rou′-sĭ-a
lap-id′-ĕ-a
Lap-la′-cĕ-a
Lap-or′-tĕ-a
lap-pa′-cĕ-a
lap-pon′-ic-um
Lap-po′-num
Lap′-pul-a
Lar′-bre-a
Lar-diz-ab-a′-la
Lar-diz-ab-a′-lĕ-æ
lar-ic-if-ol′-ĭ-a
Lar-ic′-ĭ-o
Lar′-ic-is
Lar′-ix
Lar-pen′-tæ
Lar′-rea
la-ser-pi′-tĭ-if-ol′-ĭ-um
Las-ĭ-ag-ro′-stis
Las-ĭ-an′-dra*
las-ĭ-anth′-os
las-ĭ-oc-ar′-pus
las-ĭ-og-lōs′-sum
Las-ĭ-on-e′-ma
las-ĭ-op-et′-al-a
Las-ĭ-op-et-al′-ĕ-æ
Las-ĭ-op-et′-al-um
Las-ĭ-op′-ter-a
Las′-ĭ-op-us
las-ĭ-os′-path-a
Las-ĭ-os-per′-mum
Las-ĭ-os′-tom-a
Las-se-aux′-ĭ-i
Las-the′-nĭ-a
Las′-tre-a
la′-ta
Lat-a′-nĭ-a
lat-eb-ro′-sa
lat-er-if-lo′-ra*
lat-er-it′-ĭ-a
La-tham′-ĭ-æ
La′-thom-i
Lath-ræ′-a
lath-yr-ŏ-i′-dēs
Lath′-yr-us
la-tif-ol′-ĭ-a*
la′-tif-rons
la-tim-ac-ul-a′-tum
la′-tip-ēs
la-tis-ec′-ta
la-tis′-sim-a
La′-tŭ-a
Lauch-ĕ-a′-na
Lau-ge′-rĭ-a
Lau-re′-lĭ-a
Laur-em-berg′-ĭ-a
Laur-en-cĭ-a′-na
Laur-ent′-ĭ-a
Laur-ent′-ĭ-i
Laur′-ĕ-ol-a
laur-if-ol′-ĭ-um
laur-i′-na
Laur-i′-nĕ-æ
Lau-roc-er′-as-us
Laur′-us
Lav-al′-le-i
Lav-an′-dul-a
lav-an-dul-a′-cĕ-a
lav-an-dul-æ-fol′-ĭ-um
Lav-a′-ter-a
Lav-ra′-di-a
Law-ren-cĕ-a′-na
Law-so′-nĭ-a
Law-so-nĭ-a′-na
lax-if-lo′-ra
lax-if-ol′-ĭ-a
Lax-man′-nĭ-a
lax′-us
Lay′-ĭ-a
Laz-u′-li
Leach-ĭ-a′-num
Lear′-ĭ-i
Leav-en-worth′-ĭ-a
Leb′-bek
Leb-eck′-ĭ-a
Leb-ret-o′-nĭ-a
Lec-an-i′-næ
Lec-an′-ĭ-um
Lec-an-op′-ter-is
Lec-an-o′-ra
Lech-en-aul′-tĭ-a
Lech-le′-ra
Lec-on′-tĕ-i
Lec-on′-tĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā*′-lmist; ĕ as in s*ĕ*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*ŏ*t′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū*′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in mus*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Le′-cyth-æ
Le-cyth′-ĕ-a
Le-cyth-id′-ĕ-æ
Le′-cyth-is*
Led-eb-our′-ĭ-a
Led-eb-our-ĭ-a′-na
Led-eb-our′-ĭ-i
Led-en-berg′-ĭ-a
Ledg-er-ĭ-a′-na
le-dif-ol′-ĭ-a
Le-doc-ar′-pum
Le′-dum
Lee′-a
Lee-a′-na
Leech-ĭ-a′-num
Leeds′-ĭ-i
Leg-ouz′-ĭ-a
Leg-rand′-ĭ
Leg-rel′-læ
Leg-rel-lĭ-a′-na
Leg-uay-a′-na
Leg-u-min-o′-sæ
Leh-man′-ni
lei-anth-e′-rum
Lei-anth′-us
Lei-bold′-ĭ-i
Leich-ardt′-ĭ-a
Leich-ardt-ĭ-a′-na
Leich-ten-stein-ĭ-a′-na
Leicht′-lin-i
Leicht-lin′-ĭ-i
Leim-anth′-ĭ-um
lei-oc-ar′-pus
Lei-oc-ar′-ŷ-a
Lei-och-i′-lus
Lei-oph-yl′-lum
lei-orh-i′-zon
Lei-os-per′-mum
Lei-ot′-ul-us
Lei-phai′-mos
Leit-ne′-rĭ-a
Leit-ne′-rĭ-ĕ-æ
Leitz′-ĭ-a
Le′-jic-a
Le′-ma
Lem-ai-rĕ-a′-num
Lem-bot-rop′-is
Lem-min′-ghĕ-ĭ
Lem′-na
Lem-na′-cĕ-æ
Lem-oi′-nĕ-i
Lem-oin-ĭ-e′-rĭ-i
Le-mo′-nĭ-a*
Lem-on-ĭ-a′-na
len-dig′-er-a
Len-dy-a′-nus
Lens
len′-ta
Len-ta′-go
Len-tib-ul-a′-rĭ-ĕ-æ
len-tic-ul-a′-ris
len-ti′-gin-is
len-ti-gin-o′-sum
len-tis-cif-ol′-ĭ-a
Len-tis′-cus

le-o-nen′-sis
Lĕ-o-no′-tis*
Lĕ-on-tic′-e
Lĕ-on′-tod-on
lĕ-on-tog-lōs′-sa
Lĕ-on-top-od′-ĭ-um
lĕ-o-nu-rŏ-i′-dēs
Lĕ-o-nu′-rus
Lĕ-op-ar-danth′-us
lĕ-op-ar-di′-num
Le-op-ōl′-di
Le-op-ōl-di′-nĭ-a
Lep′-ach-ys
Lep-anth′-ēs
Lep-anth′-us
Lep-ech-i′-nĭ-a
Lep-er-i′-za
Lep-ic-ys′-tis
lep′-id-a
Lep-id-ag′-ath-is*
Lep-id′-ĭ-i
Lep-id′-ĭ-um
lep-id-oc-ar′-pon
Lep-id-oc-ar′-ŷ-a
lep-id-oc-au′-lon
Lep-id-op-el′-ma
lep-id-oph-yl′-la
Lep-id-op′-ter-a
lep-id-op′-ter-is
lep-id-o′-ta
lep′-id-us
Lep-ĭ-o′-ta
Lep-is′-mĭ-um
lep-ro′-sa
Lep-tan′-dra
Lep-tar-gyr-ei′-a
Lep-tin-el′-la
Lep-toc-ar′-pus
lep-toc-au′-lis
Lep-toc′-er-as
Lep-toch-i′-lus
Lep-toc-ĭ-on′-ĭ-um
lep-toc′-lad-a
Lep-tod-ac′-tyl-on
Lep-tod-er′-mis
Lep-tog-lōt′-tis
Lep-tog-ram′-me
Lep-tog′-yn-e
lep-tol′-ep-is
Lep-tom-er′-ĭ-a
lep-toph-yl′-la
Lep-top-leu′-rĭ-a
Lep-top′-ter-is
lep′-top-us
Lep-top-y′-rum
lep-tos-ep′-al-a
Lep-tos′-iph-ŏn
lep-tos-pa′-dix
Lep-tos-per′-mum
Lep-tos-tach′-ŷ-a
Lep-tos-tig′-ma
Lep-tos′-yn-e
Lep′-tot-ēs
Lep′-toth-rix
Lep-toth-yr′-ĭ-um

Lep′-tus
Les-chen-ault′-ĭ-a
Les-chen-ault-ĭ-a′-na
Les-chen-ault′-ĭ-i
Les-pe-de′-za
Les-sert′-ĭ-a
les-sert-ĭ-if-ol′-ĭ-a
Les-so′-nĭ-i
Lett-som′-ĭ-a
Leu-cad-en′-dron
leu-canth′-a
leu-canth-em-if-ol′-ĭ-a
Leu-canth′-em-um
Leuch-ten-berg′-ĭ-a
leu-cob′-ot-rys
Leu-coc-ar′-pus
leu-coc-eph′-al-us
leu-coch-i′-lum
Leu-coc-or′-yn-e
Leu-cŏ-hy′-le
Leu′-cŏ-ĭ-um
Leu-col-æ′-na
leu-con-eu′-ra
leu-coph-æ′-a
leu-coph-æ-a′-rĭ-a
leu-coph-æ′-rĭ-a
leu-coph-thal′-mus
Leu-coph-yl′-lĕ-æ
leu-coph-yl′-lum
Leu-cop-o′-gŏn
leu-cop-y′-rus
leu-corh-i′-za
leu-corh′-od-a
Leu-cos-per′-mum
leu-cos′-tach-ys
Leu-cos-teg′-ĭ-a
leu-cos′-tom-um
Leu-coth′-ŏ-e
leu-cox-anth′-a
leu-cox′-yl-a
Leuz′-ĕ-a
Leuz-ĕ-a′-num
Lev-en-hook′-ĭ-a
Lev-is′-tic-um
Lew-is′-ĭ-a
Lew-is-ĭ-a′-nus
Lew-is′-ĭ-i
Lex-ar′-sa
Leyces-te′-rĭ-a
Ley′-i
Leys′-ser-a
L'He-rit-ĭ-e′-ri
L'Her-min-ĭ-e′-ri
Lhotz′-kŷ-a
Lĭ-a′-bum
Li-a′-tris
lib-an-en′-sis
Lib′-an-i
lib-an-o′-tic-us
Lib-an-o′-tis
lib-e′-ri-a
Lib-ert′-ĭ-a
Lib-oc-ed′-rus
Li-bo′-nĭ-a
Li-bo-nĭ-a′-na

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten: ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

lib-ur′-nic-us
Li-che′-nēs
Lich-ten-stein′-ĭ-a
Lic-u-a′-la
Lie-big′-ĭ-a
Lieb-man-nĭ-a′-num
Li-er-val′-ĭ-i
Li-etz′-ĕ-i
Li-etz′-ĭ-a
Li-ev-e′-na
Lig-e′-rĭ-a
Light-foot′-ĭ-a
lig-nip-er′-da
lig-no′-sus
Lig′-tu
lig-ul-a′-re
Lig-ul-a′-rĭ-a
Lig-us′-tic-i
Lig-us′-tic-um
Lig-us′-tri
lig-us-trif-ol′-ĭ-a
Lig-us-tri′-na
Lig-us′-trum
li-la-cin-el′-la
li-la′-cin-us
Li-la′-cis
Li-lĭ-a′-cĕ-æ
Li-lĭ-a′-go
Li-lĭ-as′-trum
li-lĭ-if-lo′-ra
Li′-lĭ-um*
li-ma-ci′-na
li-ma′-cis
Li-mat-o′-dēs
Li′-max
lim-ba′-tum
Li-met′-ta
Li′-mĭ-a
Lim-mingh′-ĕ-i
Lim-nanth′-ĕ-æ
Lim-nanth′-em-um
Lim-nanth′-ēs
Lim-ne′-tis
Lim-nob′-ĭ-um
Lim-noch′-ar-is
Lim-non-e′-sis
Li-mod-o′-rum
Li-mo′-nĭ-a
Li-mo-nĭ-as′-trum
li-mo-nĭ-if-ol′-ĭ-um
Li-mo′-num
li-mo′-sa
Li′-na
Li-na′-rĭ-a
li-na-rĭ-æ-fol′-ĭ-a
li-na-rif-ol′-ĭ-us
Lin-aw-ĭ-a′-num
Lin-co′-nĭ-a
Lin-del-of′-ĭ-a
Lin′-den-i
Lin-den′-ĭ-a
Lin-den-ĭ-a′-na
Lin-de′-ra
Lind-heim′-er-a
Lind-heim′-er-i
Lin′-dig-i
Lind′-ley-a
Lind-ley-a′-num
Lind′-ley-i
Lind-sæ′-a
Lind-say′-a
Li′-nĕ-æ
li-nĕ-a′-re
li-nĕ-a-rif-ol′-ĭ-a
li-nĕ-a-ril′-ob-a
li-nĕ-at-el′-la
li-nĕ-a′-tus
Lin′-gua
lin-guæ-fol′-ĭ-a
lin-guæ-for′-me
lin-guel′-la
lin-guif-or′-me
lin-gul-a′-ta
li-nif′-er-a
li-nif-ol′-ĭ-us
Link′-ĭ-a
Lin-næ′-a
Lin-næ-a′-na
Lin-næ′-i
lin-næ-ŏ-i′-dēs
li-nŏ-i′-dēs
li-noph-yl′-la
Li-nos′-yr-is
lin-tĕ-a′-rĭ-a
Li′-num
Li-nyph′-ĭ-a
Li-par′-ĭ-a
Li-poch-æ′-te
Lip′-ar-is
Lip-os′-tom-a
Lip′-pĭ-a
Liq-uid-am′-bar
Liq-uir-i′-tĭ-a
Li-rĭ-od-en′-dron
Li′-rĭ-op-e
Lis-ĭ-anth′-us
Lis-santh′-e
Lis-soch-i′-lus
Lis′-ter-a
Lis-tros′-tach-ys
Lis-ў-anth′-us
Li′-ta
Li-tanth′-us
Lit′-chi
Lith-oc-ol-le′-tis
lith-os-per-mŏ-i′-dēs
Lith-os-per′-mum
Lith-ræ′-a
Li-tob-roch′-ĭ-a
Lit-se′-a
Lit-tæ′-a
Lit-ton′-ĭ-a
lit-tor-a′-lis
lit-tor′-ĕ-a
Lit-tor-el′-la
lit-u-if-lo′-rum
lit′-um
li′-vid-us
Liv-ing-sto-nĕ-a′-na
Liv-ing-sto′-nĭ-i
Liv-is-to′-na
Lla′-ve-a
Lloyd′-ĭ-a
Lo-a′-sa
Lo-a′-sĕ-æ
lob-a′-ta
Lob-bĭ-a′-nus
Lob′-bĭ-i
Lo-be′-lĭ-a
Lo-be-lĭ-a′-cĕ-æ
Lo-be-lĭ-a′-num
Lo-be′-lĭ-i
lo-be-lĭ-ŏ-i′-dēs
Lo-bel′-lĭ-i
Lob-e′-sĭ-a
Lob-os-te′-mōn
lob-ul-a′-ris
Loch-e′-rĭ-a
Lock-hart′-ĭ-a
Lod-dig-e′-sĭ-a
Lod-dig-e-sĭ-a′-num
Lod-dig-e′-sĭ-i
Lod-ŏ-i′-cĕ-a
Loef-fling′-ĭ-i
Læs-e′-li
Læs-e′-lĭ-a
Log-an′-ĭ-a
Log-an-ĭ-a′-cĕ-æ
Lois-el-eur′-ĭ-a
Lois-el′-li
lol-ĭ-a′-cĕ-us
Lol′-ĭ-um
Lo-mag-ram′-me*
Lo-man′-dra
Lo-ma′-rĭ-a
Lo-ma-rid′-ĭ-um
Lo-ma-rĭ-op′-sis
Lo-ma′-tĭ-a
Lo-mat-og-on′-ĭ-um
Lo-mat-oph-yl′-lum
Lo′-nas
lonch-it-id′-ĕ-a
Lonch-i′-tis
Lonch-oc-ar′-pus
Londes-bor-ough-ĭ-a′-num
lon′-ga
lon-gæ′-va
Lon-ga′-na
Long-champ′-ĭ-a
long-eb-rac-tĕ-a′-tum
long-ep-ed-un-cul-a′-ta
long-er-ac-em-o′-sum
long-ib-rac-tĕ-a′-ta
long-ic-aud-a′-ta
long-ic-ol′-la
Long-ic-or′-nĭ-a
long-ic-or′-nu
long-ic-ru′-ris
long-ic-us′-pis
long-if-i′-lis
long-if-lo′-ra
long-if-ol′-ĭ-a
long-ĭ-ha-ma′-ta
long-il-a′-min-a′-tum
long-il′-ob-a

Words derived from Latin and Greek (*i.e.*, **all except those in italics) to be pronounced as follows : ă as in *ăp-art′* ; ā as in *pā′-lmist* ; ĕ as in *slĕn′-der* ; ē as in *vē′-ined* ; ĭ as in *thĭn* ; ī as in *mach-ī′-nist* ; ŏ as in *rŏt′-ten* ; ō as in *vō′-ter* ; ŭ as in *pow′-er-fŭl* ; ū as in *rū′-ler* ; ў as ĭ ; ȳ as ī ; æ, œ, ei, as *ai* in *pain* ; au as *ou* in *house* ; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)**

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

long-im-u-cro-na′-ta
long′-ip-ēs
long-ip-et′-al-a
long-ip′-il-a
long-ip-in-na′-ta
long-ir-ac-e-mo′-sa
long-ir-os′-tris
long-is-ca′-pa
long-is′-path-a
long-is-pi′-nus
long-is′-sim-a
long-is′-tyl-um
long′-us
Lon-ic-e′-ra
lon-ic-e-rŏ-i′-dēs
Lop-ad-oc′-al-yx
Lop-e′-zĭ-a
Loph-anth′-us*
Loph-id′-ĭ-um
Loph′-ĭ-ol-a
Loph-ĭ-os-tom-a′-cĕ-i
Loph-i′-ra
Loph-oc-li′-nĭ-um
Loph-ol′-ep-is
Loph-os-o′-rus
Loph-os-per′-mum
Loph-y′-rus
Lop-im′-ĭ-a
Lo-ranth-a′-cĕ-æ
Lo-ranth′-us*
Lor-ent′-ĕ-a
Lor-enz-ĭ-a′-na
Lor-ey′-a
Lor-ey′-i
lo-ri′-cĕ-um
lo-rif-ol′-ĭ-us
Lor-in-se′-rĭ-a
Lo-rop-et′-al-um
lo-tif-ol′-ĭ-a
Lo′-tus
Lot′-zĕ-a
Lou′-don-i
Lou-don-ĭ-a′-na
Lou-don′-ĭ-i
Lou-et′-ti
Lour-eir′-i
Lour-rea-ì-a′-num
Low′-ĕ-a
Low′-ĕ-i
Low-ĭ-a′-num
Low′-ĭ-i
Lox-anth′-ēs
Lox-anth′-us
lox-en′-sis
Lox-oc-oc′-cus
Lox-os′-caph-e
Lox-o′-tis
Lox-so′-ma
Loz-ot-æ′-nĭ-a
Lub-bers-ĭ-a′-na
Lu-bin′-ĭ-a
lu-bric-ip′-ed-a
Lu′-ca-nus
Lu-ci-a′-ni
lu′-cid-um
lu-cif′-ug-us
Lu-ci′-li-æ
Lu-ci′-næ-a
lu-co′-rum
Lu-cu′-lĭ-a
Lu-cu′-lĭ-æ
Lu-cu′-ma
Lu-cum′-bĕ-a′-na
Lu-cy-a′-nus
Lud-dem-an′-nĭ-a
Lud-dem-an-nĭ-a′-num
Lud-dem-an′-nĭ-i
Lu′-dĭ-a
lu-dib-un′-da
Lu-di′-sĭ-a
Lu-dov′-ĭ-a
lu-dov-ic-ĭ-a′-na
Lud-wig-ĭ-a′-na
Luf′-fa
lug-du-nen′-sis
Lu′-he-a
Lu-i′-sĭ-a
Lu′-ma
Lum-bri′-cus
Lu′-na
Lu-na′-rĭ-a
lu-na-rif-ol′-ĭ-a
lu-na′-ris
lu-na-rŏ-i′-dēs
lu-na′-ta
lu-nif′-er-a
lu-nul-a′-ta
lup-ic-i′-dum
Lup-i-nas′-ter
lup-i-nif-ol′-ĭ-a
lup-i-nŏ-i′-dēs
Lup-i′-nus
Lup-i′-nus
lup-ul-i′-na
Lup′-ul-us
lu′-rid-a
Lusch-nath-ĭ-a′-num
Lusch-nat-ĭ-a′-num
lu-sit-a′-nic-us
Lus-sa′-cĭ-a
lu′-tĕ-a
lu′-tĕ-ol-um
lu-tes′-cens
lu-te-tĭ-a′-na
lux-a′-tum
Lux-em-berg′-ĭ-a
lux-ur′-ĭ-ans
Lu′-zul-a
Luz-u-rĭ-a′-ga
Ly-all′-ĭ-i
Lyc-as′-te
Lych′-is
lych-nid′-ĕ-a
Lych′-nis
lych-ni′-tis
lyc′-ĭ-a
Lyc-im′-nĭ-a
lyc-ĭ-ŏ-i′-dēs
Lyc-ĭ-op-le′-sĭ-um
Lyc′-ĭ-um
lyc-oc′-ton-um
Lyc-op-er′-don
Lyc-op-er′-sic-um
Lyc-op-od-ĭ-a′-cĕ-æ
Lyc-op-od′-ĭ-ĕ-æ
lyc-op-od-ĭ-ŏ-i′-dēs
Lyc-op-od′-ĭ-um*
lyc-op′-sod-is
Lyc-o′-ris
Lyc-o′-sa
Ly′-da
ly′-dĭ-um
Ly-el′-li
Lyg-is′-tum
Lyg-od-ic′-tŷ-on
Lyg-o′-dĭ-um
Lyg′-us
Lyn-ce′-a
Lynch-ĭ-a′-na
Ly′-on-i
Ly-on′-ĭ-a
Ly-on′-si
Ly-on′-sĭ-a
Ly-pe′-rĭ-a
lyr-a′-ta
lyr-og-lōs′-sum
Lys-anth′-e
Ly-sim-ach′-ĭ-a
Ly-sin-e′-ma
Lys-ĭ-on-o′-tus
Lys-is-tig′-ma
Lyth-ra′-rĭ-ĕ-æ
Lyth′-rum
Lyt′-ta

Ma-ack′-ĭ-a
Ma-ack′-ĭ-i
Ma′-ba
Mac-ad-am′-ĭ-a
Mac-af-ee-a′-na
Mac-arth-ur′-i-i
Mac-Carth′-ĭ-æ
Mac-don-ald′-i-a
Mac-don-ald′-ĭ-æ
Mac-far′-lane-i
Mac-fee-a′-na
Mach-ær-anth-e′-ra
Mach-ær′-ĭ-um
mac-il-en′-ta
Mac-kai-a′-na
Mac-kay′-a
Mac-kay-a′-nus
Mac-kay′-i
Mac-ken′-ĭ-i
Mac-ken′-zĭ-i
Mac-lea′-i
Mac-lean′-a
Mac-lean′-ĭ-a
Mac-leay′-a
Mac-leay′-i
Mac-lu′-ra
Mac-nab-ĭ-a′-na
Mac-o′-des
Mac-ow′-an-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ow* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Māc′-qui
mac-rac-an′-tha
Mac-rad-e′-nĭ-a
mac-rad-e′-num
Mac-ræ′-a
Mac-ræ′-i
mac-ran′-dra
Mac-ran-op′-lon
Mac-ranth′-us
mac-rob′-ot-rys
mac-roc-al′-yx
mac-roc-ar′-pa
mac-roc-eph′-al-a
Mac-roc-er-at-i′-dēs
mac-roch-i′-lum
Mac-roch′-lŏ-a
Mac-roc′-lad-us
Mac-roc-ne′-mum*
mac-rod-ac′-tyl-a
mac′-rod-on
mac-rod-on′-ta
Mac-rog-lōs′-sa
Mac-rol-ep-id-op′-ter-a
Mac-rol-ob′-ĭ-um
mac-rol′-ob-um
Mac-rom-er′-ĭ-a
mac-rop-et′-al-a
mac-roph-yl′-lum
Mac-rop′-ip-er
mac-rop-lec′-tron
Mac-rop-le′-thus
mac-rop′-od-a
mac-rop′-ter-a
mac′-rop-us
mac-rorh-i′-zon
Mac-rorh-yn′-chus
Mac-ros′-iph-ōn
mac-ros-pa′-dix
mac-ros-pei′-la
Mac-ros-por′-ĭ-um
mac-ros′-por-um
mac-ros-trich′-ŷ-a
mac-ros′-tach-ys
mac-ros-teg′-ĭ-a
mac-ros-te′-ma
mac-ros-teph′-an-a
Mac-ros-tig′-ma
mac-ros′-tyl-a
Mac-ros′-tyl-is
mac-roth-yr′-sa
mac-ro′-tis
Mac-rot′-rop-is
mac-rou′-ra
Mac-roz-a′-mĭ-a
mac-ru′-ra
mac-ul-a′-tus
mac-ul-o′-sa
mad-ag-as-car-ĭ-en′-sis
Ma-da′-rĭ-a
Mad-ar-og-lōs′-sa
Mad′-den-i
Mad-dis-on-ĭ-a′-na
mad-e-ren′-sis
Ma′-di-a
Mad-on′-na
mad-ras-pat-a′-na
mad-ren′-sĕ
Mæ′-ru-a
Mæ′-sa
mæ′-sĭ-ac-us
Mag-dal-e′-nus
mag-el-lan′-ic-us
mag′-ic-um
Mag′-lĭ-a
Mag-nic-or-o-na′-ti
mag-nif′-ic-us
Mag-no′-lĭ-a
Mag-no-lĭ-a′-cĕ-æ
mag-no-lĭ-æ-fol′-ĭ-um
Mah-ag-o′-ni
Mah′-al-eb
Ma-har-ang′-a
Ma-her′-nĭ-a
Ma-ho′-nĭ-a
Ma-hu′-rĕ-a
Ma′-i
Mai-anth′-em-um
ma-id-if-ol′-ĭ-a
Main′-ĕ-a
Mair′-ĭ-a
ma-ja′-lis
ma-jes′-tic-a
ma′-jor
Maj-or-a′-na
maj-or-a-nŏ-ĭ′-dēs
ma′-jus
Ma′-ki
Mak-oy′-a
Mak-oy-a′-na
Mal-ab-ai′-la
mal-ab-a′-ric-a
mal-a-bath′-ric-a
Ma-lab-ath′-rum
Mal-ach-ad-e′-nĭ-a
Mal-ach′-ĭ-um
Mal-ach-od-en′-dron
Mal-ach′-ra
Mal-ac-oc-ar′-pus
mal-ac-ŏ-ĭ′-dēs
mal-ai-a′-na
Mal-ax′-is
ma-lay-a′-num
Mal-col′-mĭ-a
mal′-ĕ-ol-ens*
Mal-es-herb′-ĭ-ĕ-æ
Ma′-li*
ma-lif-or′-mis
mal-lĕ-if′-er-a
Mal-loc-oc′-ca
Ma′-lop-e
Mal-or-ti′-ĕ-a
Mal-or-ti-ĕ-a′-nus
Mal-pi′-ghĭ-a
Mal-pi-ghĭ-a′-cĕ-æ
Ma′-lus
Mal′-va
Mal-va′-cĕ-æ
Mal-va-cĕ-a′-rum
mal-va′-cĕ-um
Mal-vas′-trum
Mal-vav-is′-cus
Ma′-lŷ-i
Mal-zi′-nĕ-i
Ma′-mĕ-i
Mam-es′-tra
Mam-il-la′-rĭ-a
Mam′-me-a
Mam-mil-la′-rĭ-a
mam-mo′-sa
Man-cin-el′-la
Man-dev-il′-la
Man-dĭ-oc′-ca
man-dĭ-oc-ca′-na
Man-drag′-or-a
mand-schu′-ric-us
Man-es-ca′-vi
Man-et′-tĭ-a
man-et-tĭ-æ-flo′-rus
Mang′-has
Mang-if′-er-a
Mang′-le
Mang-les′-ĭ-a
Mang-les′-ĭ-i
Mang-lil′-la
Mang′-or-a
Mang-os-ta′-na
Man-ic-a′-rĭ-a
man-ic-a′-ta
Man′-i-hot
Man-li′-lĭ-a
Man′-nĭ-i
Man-tis′-ĭ-a
Man-ul′-ĕ-a
Man-ul-ĕ-ie′-æ
Ma-on-et′-ti
Ma′-pa
Map′-pa
Mar-a′-ja
Ma′-ram
Mar-an′-ta
Mar-an′-tæ
mar-an-tæ-fol′-ĭ-um
Mar-an′-tĕ-æ
Mar-anth′-ēs
Mar-as′-mĭ-us
Mar-at′-tĭ-a
Mar-at′-tĭ-ĕ-æ
Marc-grav′-ĭ-ĕ-æ
March′-ĭ-i
Mar-ci-a′-nus
mar-gar-i-ta′-cĕ-um
mar-gar-i-tif′-er-a
mar-gin-a′-lis
mar-gin-a′-ta
mar-gin-el′-la
mar′-gin-em-tor′-quens
Mar-gyr-ic-ar′-pus
Mar-i′-æ
Mar-i′-æ-Reg-i′-næ
Mar-ĭ-al′-va
Mar-i-a′-næ
Ma-rĭ-anth′-us
Mar-i-a′-num
Ma′-ric-a
Ma-ries′-ĭ-i

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; **ā as in psā′-lmist**; **ĕ as** in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as **in vō′-ter**; **ŭ as in pow′-er-fŭl**; ū as in rū′-ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary *continued.*

Ma′-ril-a
ma-ri-land′-ic-a
mar-i′-na
mar-it′-im-a
Mar′-lĕ-a
Mar-me′-los
mar-mor-a′-ta
mar-mor′-ĕ-a
mar-mor-oph-yl′-lum
Mar-nock-ĭ-a′-na
mar-oc-ca′-na
mar-o-ni-en′-sĕ
Mar-ri-ot-tĭ-a′-na
Mar-rub-ĭ-as′-trum
Mar-rub′-ĭ-um
Mar-ry-at′-tæ
Mar-schal-lĭ-a′-na
Mars-den′-ĭ-a
Mar-shal′-lĭ-a
Mar-shal′-lĭ-æ
Mar-shal-lĭ-a′-num
Mar-shal′-lĭ-i
Mar-si′-lĕ-a
Mar-si′-lĕ-æ
Mar-su′-pĭ-um
Mar′-tag-on
Mar-tens′-ĭ-i
Mar-tĭ-a′-na
Mar′-tĭ-i
Mar-ti-ne′-zĭ-a
Mar-ti′-ni
mar-tin-i-cen′-sis
Mar-tin-i-e′-rĭ-a
Mar-tyn′-ĭ-a
Ma′-ru
Mar′-um
Mar-u′-mĭ-a
ma-ry-land′-ic-a
mas
Mas-car-en-ha′-sĭ-a
mas′-cul-a
mas-cul-a′-ta
Mas-dev-al′-lĭ-a
Mas-sal-ong-ĭ-a′-num
Mas-san′-gĕ-a
Mas-san-gĕ-a′-na
Mas-san′-gĕ-i
Mas-so′-ni
Mas-so′-nĭ-a
Mas-so-nĭ-a′-na
Mas-so′-rĭ-a
Mas-tac-anth′-us
Mas-ters-ĭ-a′-na
Mas-ters′-ĭ-i
Mas-u′-ca
Mat-ax′-a
Math′-ĕ-a
Math′-ĭ-ol-a
Math-o-tĭ-a′-na
Mat-o′-nĭ-a
Mat-ou′-re-a
Ma-tri-ca′-rĭ-a
ma-tro-na′-lis
Mat-thews′-ĭ-i
Mat-thi′-ol-i
Mat-this-o′-nĭ-a
Mat-tuschk′-ĭ-a
ma-tu-ti′-na
Mau′-gĕ-i
Mau′-lĕ-i
mau′-ra
Mau-ran′-dy-a
Mau′-rĭ-a
mau-ri-ta′-nic-a
Mau-rit′-ĭ-a
mau-rit-ĭ-æ-for′-mis
mau-rit-ĭ-a′-nus
Mau-roc-e′-nĭ-a
mau-ro′-rum
Maw-e-a′-na
Maw′-ĭ-i
max-il-la′-rĕ
Max-il-la′-rĭ-a
max′-im-a
Max-im-il-ĭ-a′-na
Max-im-il-ĭ-a′-ni
Max-im-ow-ic′-zĭ-a
Max-im-ow-ic′-zĭ-i
May-a′-ca
May-a′-cĕ-æ
May-a′-na
Mayr′-i
Ma′-ys
May′-ten-us
Maz′-el-i
Maz-el′-lĭ-i
Maz′-us
Mead′-ĭ-a
Me-co-nop′-sis*
Me-cos-o′-rus
Me-de′-ol-a
Me′-dic-a*
Me-dic-a′-go
Med-i′-cĭ-a*
Me-din-il′-la
Med-ĭ-oc-or-o-na′-ti
med-it-er-ra′-nĕ-us
med′-ĭ-um
med-ol-ŏ-i′-dēs
Med-o′-ra
med-ul-la′-ris
Med-u′-sæ
Meg-ac-ar-pæ′-a
Meg-ac-ar′-pha
meg-ac′-er-as
Meg-ach-i′-le
Meg-ac-li′-nĭ-um
meg-al-anth′-a
meg-al′-od-us
Meg-al-oth-e′-ca
meg-aph-yl′-la
meg-ap-ot-am′-ic-us*
Meg-ar-rhi′-za
Meg-as′-ĕ-a
meg-as-per′-ma
meg-as-tach′-y̆-a
meg-as-tig′-ma
me-if-ol′-ĭ-um
Meir-ac-yl′-ĭ-um
meir′-ax
Mel-al-eu′-ca*
Mel-amp′-sor-a
Mel-am-py′-rum
mel-an-anth′-um
mel-an-a′-rĭ-us
mel-an-chol′-ic-us
Mel-an′-drĭ-um
Mel-an-oc-ar′-pum
mel-an-oc-au′-lon
mel-an-och-æ′-tēs
mel-an-och-ry′-sum
mel-an-oc-oc′-ca
mel-an-ol-eu′-ca
mel-an-op-et′-al-um
mel-an-oph-thal′-mum
mel′-an-ōps
Mel-an-op′-ter-is
mel-an′-op-us
mel-an-orh′-od-a*
Mel-an-or-rhoe′-a
Mel-an-os-el-i′-num
mel-an-ox-anth′-a
mel-an-ox′-yl-on
Mel-anth-a′-cĕ-æ
Mel-anth-e′-ra
Mel-anth′-ĭ-um
Mel-arh-i′-za
Mel-as′-ma
Mel-as-phæ′-rul-a
Mel-as′-tom-a
Mel-as-tom-a′-cĕ-æ
Mel-ĕ-a′-gris
mel-ĕ-a′-grŏ-i′-dēs
Mel-eg-ue′-ta
Mel-han′-ĭ-a
Mel′-ĭ-a
Mel-ĭ-a′-cĕ-æ
Mel-ĭ-anth′-ĕ-æ
Mel-i-anth′-us
Mel-ich′-rus
Mel-ic-oc′-ca
Mel-ic′-op-e
mel-il-o-tŏ-i′-dēs
Mel-il-o′-tus*
Mel-in′-dres
Mel-in-o′-ni
Me′-lin-um
Mel-ĭ-os′-ma
mel-ĭ-o′-sum
Mel-is′-sa
mel-is-sæ-fol′-ĭ-a
mel-is-sŏ-i′-dēs
Mel-is-soph-yl′-lum
mel-it-tif-ol′-ĭ-a
Mel-it′-tis
mel′-lĕ-us
mel-lif′-er-a
mel-lif′-ic-a
Mel′-loc-a
Me′-lo*
Me-loc-ac′-tus
mel-oc′-ton-um
Me-lod-i′-nus
me-lof-or′-mis
Mel-ol-onth′-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *a*p-art′: ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist: ŏ as in rŏt′-ten: ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; y̆ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in *house*: g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary —*continued.*

Me-long′-en-a
Mel-vil′-la
mem-bra-na′-cĕ-um
mem-bra-nif-ol′-ĭ-um
Me-me-cyl′-ĕ-æ
Me-me′-cyl-on
Mem-phi′-tic-a
Men-de′-lĭ-i
Men-del′-li
men-di′-ca
Me-nin′-ĭ-a
me-nis-cĭ-if-ol′-ĭ-um
me-nis-cĭ-ŏ-i′-dēs
Me-nis′-cĭ-um
Me-nis-per-ma′-cĕ-æ
Me-nis-per′-mum*
Men′-tha
Men′-thæ
men-thæ-fol′-ĭ-a
Men-thas′-tri
men′-tĭ-ens
Ment-ze′-lĭ-a
Me-nў-anth′-ēs
Men-zies′-ĭ-a
Men-zies-ĭ-a′-na
Men-zies′-ĭ-i
Merck′-i
Mer-cur-ĭ-a′-lis
mer-dig′-er-a
Mer-en-de′-ra
Me-ri-a′-na
Me-ri-a′-næ
Me ri-a′-nĭ-a
Me-ris-tos-tig′-ma
Mer′-od-on
Mer-ten′-sĭ-a
Mer-ten-sĭ-a′-na
Mer-ul′-ĭ-us
Mer′-yt-a
Mes-ēm′-brў-anth-em′-ĕ-æ
mes-ēm-brў-anth′-em-ŏ-i′-dēs
Mes-ĕm-brў-anth′-em-um*
Mes-ēm′-brў-ĕ-æ
Mes-och-læ′-na
mes-och′-lŏ-a
Mes-oc-las′-tēs
mes-ol-eu′-cum
Mes-os-pi-nid′-ĭ-um
mes-pil-ŏ-i′-dēs
Mes′-pil-us
Mes-ser-schmid′-ĭ-a
Me′-su-a
Met′-ak-e
met-al′-lic-a
Met-ax′-ў-a
Me′-tel
me-tel-ŏ-i′-dēs
Meth-on′-ic-a
Me-trod-o′-rĕ-a
Me-tros-id-e′-ros
Me-trox′-yl-on
Met-ter-nich′-ĭ-a
Met-ter-nich′-ĭ-i
me-tul-æ-flo′-ra
me-tul-if′-er-us
Me′-um
mex-ic-a′-na
Mey-en′-ĭ-a
Mey′-er-i
Mey-er-ĭ-a′-num
Meyn′-ĭ-a
Mez-e′-rĕ-on
Mez-e′-rĕ-um
mic′-ans
Mich-aux′-ĭ-a
Mich-aux-ĭ-a′-num
Mich-aux′-ĭ-i
Mich-el′-ĭ-a
Mich-el′-ĭ-i
Mich-el′-li
Mi-co′-nĭ-a
Mi-cran′-dra*
mi-cran′-tha
Mi-cran-thel′-la
Mi-cran-the′-ra
Mi-croc-ach′-rys
Mi-croc-al′-ĭ-a
mi-croc-ar′-pa
Mi-croch-i′-lus
Mi-croc-oc′-cus
Mi-croc-y′-cas
mi-crod′-as-ys
mi′-crod-on
Mi-crog-as′-tēr
Mi-crog-en′-et-ēs
Mi-crog-lōs′-sa
Mi-crog-o′-nĭ-um
Mi-crog-ram′-me
mi-crog′-raph-us
Mi-crol-ep′-ĭ-a
Mi-crol-ep-id-op′-ter-a
Mi-crol-ic′-ĭ-a
Mi-crol-o′-ma
Mi-crom-er′-ĭ-a
mi-crom′-er-is
Mi-crom-yr′-tus
Mi-crop-e′-ra
Mi-crop-et′-al-on
mi-crop-et′-al-um
mi-croph-yl′-la
Mi-crop′-ip-er
mi-crop′-ter-a
mi-cros-cop′-ic-a
mi-cros′-cyph-a
Mi-cros-o′-rĭ-um
Mi-cros-per′-ma
Mi-cros-phæ′-ra
Mi-cros-taph′-yl-a
mi-cros-te′-ma
Mi-cros-teph′-ĭ-um
Mi-cros′-tyl-is
Mid-den-dorf-ĭ-a′-na
Mid-den-dorf′-ĭ-i
Mie-lich-of′-er-i
Mi-er′-ĭ-a
mi-ers-ĭ-ŏ-i′-des
Mik-an′-ĭ-a
Mik-an-ĭ-a′-na
mik-an-ĭ-ŏ-i′-dēs
Mi-le′-sĭ-i
mil-ford-en′-sis
mil-ĭ-a′-cĕ-um
mi-lit-a′-ris
Mil′-la
mil-lef-ol′-ĭ-a
mil-lef-ol-ĭ-a′-tum
Mil-leg-ra′-na
Mil-let′-tĭ-a
Mil-lĭ-a′-num
Mil-ling-to′-nĭ-a
Mil-nĕ-a′-na
Mil-titz′-ĭ-a
Mil-to′-nĭ-a
Mi-me′-tēs
mi′-mic-us
Mi-mo′-sa
Mi-mo′-sæ
mi-mo-sif-ol′-ĭ-a
Mi′-mul-us*
mi′-mus
Mi′-mus-ōps
Mi′-na
min′-ax
min-ĭ-a′-tus
min′-im-a
min′-or
min′-ta
min′-us
min-u-tis′-sim-a
min-u′-tum
Mi-quel′-ĭ-a
Mi-quel-ĭ-a′-na
Mi-quel′-ĭ-i
Mi-quel′-li
mi-ra′-bil-e
Mi-ra′-bil-is
mi-ra-do-ren′-sis
mi-ran′-dum
Mir-bel′-ĭ-a
Mis-canth′-us
Mis-cop-et′-al-um
mis-sou′-ric-a
mis-sou-ri-en′-sis
mis-tas-si′-nic-a
Mit-chel′-la
Mit-chel-lĭ-a′-na
Mit-el′-la
mit-el-lŏ-i′-dēs
Mit-i′-qui
mi′-tis
mi-tis′-sim-us
Mit-op-et′-al-um
Mit-rac-ar′-pum
mit-ræ-for′-mis
Mit-ra′-rĭ-a
Mit-ras-tig′-ma
mit-ra′-tum
Mit-rĭ-os-tig′-ma
mix′-ta
Mne-mos-il′-la
Moc-an-e′-ra
Moc-in-ĭ-a′-na
Mod-ec′-ca
mod-es′-tum
Mod′-ĭ-ol-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in *psā′-lmist*; ĕ as in *slĕn′-der*; ē as in *vē′-ined*; ĭ as in *thĭn*; ī as in *mach-ī′-nist*; ŏ as in *rŏt′-ten*; ō as in *vō′-ter*; ŭ as in *pow′-er-fŭl*; ū as in *rū′-ler*; ў as ĭ; ȳ as ī: æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Mœhn′-ĭ-a
Mœhr-ing′-ĭ-a
Mœr-en-hout-ĭ-a′-na
mog-ad-o-ren′-sis
Mog-grid′-gĕ-i
Moh′-rĭ-a
moh-rĭ-ŏ-i′-dēs
mol-da′-vic-um
Mol-i′-nĭ-a
Mol′-le
mol′-lĕ*
Mol′-lĭ-a
mol′-lic-eps
mol-lis′-sim-a
Mol-loy′-a
Mol-lu-gin′-ĕ-æ
Mo-lo-pos-per′-mum
Molt′-kĭ-a
Mol-uc′-ca
mol-uc-ca′-na
Mol-uc-cel′-la
mo-luc-cen′-sis
Mo′-ly*
Mom-or′-dic-a
mon-ac-anth′-a*
mon′-ach-a
Mon-ach-anth′-us
Mon-ach-os-o′-rum
mon-ad-el′-pha
mon-anth′-em-um
Mon-anth′-ēs
Mon-ar′-da
Mon-ar-del′-la
Mon-el′-li
Mon′-es-ēs
mon-gol′-ic-a
Mon-i′-lĭ-a
mon-i-lif′-er-a
mon-i-lif-or′-mis
Mon-im′-ĭ-a
Mon-im-ĭ-a′-cĕ-æ
Mon-im′-ĭ-ĕ-æ
Mon-iz′-ĭ-a
Mon-nĭ-e′-ra
Mon-nĭ-e′-ri
Mon-ni′-na
Mon-ob-oth′-rĭ-um
mon-oc-eph′-al-a
Mon-oc′-er-a
mon-oc′-er-as
Mon-och-æ′-tum
Mon-och-i′-lus
mon-och′-lam-ys
Mon-och-o′-rĭ-a
mon-oc-oc′-cum
Mon-od′-or-a*
Mon-og-ram′-me
mon-og′-yn-um
mon-oi′-ca
Mon-o′-len-a
Mon-ol′-oph-us
Mon-ol-o′-pĭ-a
Mon-om-er′-ĭ-a
Mon-op′-an-ax
mon-op-et′-al-a
mon-oph-yl′-la
Mon-op′-sis
mon-op′-ter-a
mon-op-yr-e′-num
Mon-or′-chis
mon-os-o′-rum
mon-os-per′-mum
mon-os-tach′-ŷ-a
Mon-oth-y′-lac-ĕ-um
Mon-ot′-oc-a
Mon-ot′-rop-a
Mon-ot-rop′-ĕ-æ
Mon-ox′-or-a
mon-re-ga-len′-sĕ
Mon-so′-nĭ-a
Mon-so′-nĭ-æ
mon-spel′-ĭ-ac-us
mon-spel-ĭ-en′-sis
mon-spel-ĭ-en′-sĭ-um
mon-spes-sul-a′-num
Mon′-ster-a
mon-stro′-sa
Mon-tag′-nĕ-a
mon-tal-ben′-sis
mon-ta′-na
Mon-ta′-no-a
Mont-bret′-ĭ-a
Mon-teir′-i
Mon-teir′-ŏ-i
mon-tev-id-en′-sis
Mon-tez-u′-ma
Mon-tez-u′-mæ
mon-tic′-ol-a
Mont-rich-ard′-ĭ-a
Moon′-ĭ-i
Moor-e-a′-na
Moor′-e-i
Mo-qui′-lĕ-a
Mo-qui′-lĭ-a
Mor-æ′-a
mor-bil-lo′-sum
Mor-chel′-la
Mor-dil-o′-na
Mor′-ĕ-æ
Mor-el′-i
Mor-el-ĭ-a′-na
Mor-el′-la
Mor-e′-nĭ-a
Mor-e′-nĭ-i
Mor-ga′-gni-a
Mor-gan′-ĭ-æ
Morg-sa′-na
mo′-ri
Mor-i-can′-dĭ-a
Mor-i′-na
Mor-in′-da
Mor-ing′-a
Mor-ing′-ĕ-æ
Mo′-rĭ-o
Mor-is-o′-ni-a
Mor-ite-i-a′-na
Mor-mo′-dēs
Mor-mol′-yc-a
Mor′-na
Mor-on-o′-bĕ-a
Morph-ix′-ĭ-a
Mor-ren′-i
Mor-ren-ĭ-a′-na
Mor-ren′-ĭ-i
Mor′-sus-ra′-næ
Mor-tin′-ĭ-a
Mo′-rus
Mos-cha′-rĭ-a
mos-cha′-ta
Mos-cheu′-tos
Mo-sen′-ĭ-i
Mos-ig′-ĭ-a
Moss′-ĭ-æ
Mouf-fet′-ta
moul-mein-en′-sĕ
Mou′-tan
Mu-ce′-din-ēs
Mu′-cor
mu-cro-na′-ta
mu-cro-nif-ol′-ĭ-um
mu-cro-nul-a′-ta
Mu-cu′-na
Muehl-en-beck′-ĭ-a
Muel′-ler-a
Mu′-ghus
Muhl-en-berg′-i
Mu′-ki-a
Mul-ge′-dĭ-um
mul-tib-rac-tĕ-a′-tus
mul-tic-au′-lis
mul′-tic-eps
mul-tic′-ol-or
mul-tif′-id-a
mul-tif-lo′-ra
mul-tif-ur-ca′-ta
mul-tij′-ug-a
mul-tin-er′-va
mul′-tip-lex
mul-tir-ad-ĭ-a′-tus
mul-tis-ec′-tum
mu′-lus
Mu′-me
Mun-by-a -na
mun′-di
Mund′-ĭ-a
mun′-dul-a
mu-ni′-tum
Mun′-ja
Mun-ro-a′-num
Mun-ro′-i
Mun-ting′-i-a
mu-ra′-lis
Mu-rall′-i-a
mu′-rex
mu-ric-a′-ta
mu-ri′-num
Mur-ray′-a
Mur-ray-a′-na
Mur-ray′-i
Mur-rel′-li-a′-num
Mur-sel′-li
Mur-ton-i-a′-na
Mu-ru-a-a′-ja
Mu′-ru-Mu′-ru
Mus

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ā as in *ap*-art′: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der: ē as in v*ē′*-ined: ī as in th*ī*n: ī as in mach-*ī′*-nist: ō as in r*ō*t′-ten: ō as in v*ō′*-ter; ū as in pow′-er-f*ŭ*l: ū as in r*ū′*-ler: ŷ as ĭ; ȳ as ī: æ, œ, ei, as *ai* in p*ai*n: au as *ou* in h*ou*se: g, c, and ch, always hard, as, for example, g in *g*ood, c in mu*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Mu′-sa
mu-sæ-fol′-ĭ-um
mu-sa′-ic-a
Mus-cæ-tox′-ic-um
Mus-ca′-ri
Mus-ca′-rĭ-a
Mus′-ci
mus-cif′-er-um
mus-cip′-ul-a
mus-cŏ-i′-dēs
Mu′-sĕ-æ
Mus-sæn′-da
Mus′-schĭ-a
Mus-schĭ-a′-num
Mus-si′-ni
Mus-si′-nĭ-a
Mus-te′-la
mu-ta′-bil-e
mu-ta′-ta
Mu-tel-li′-na
mut′-ic-a
mut-il-a′-ta
Mu-ti′-sĭ-a
Mu-ti′-sĭ-i
Mў-anth′-us
Myc-od-er′-ma
My′-con-i
My-con′-ĭ-a
Myg-in′-da
My-lam-ĭ-a′-na
Myl-i′-num
Myl-oc-ar′-ў-um
mў-op-æ-for′-mis
Mў-op-or-in′-ĕ-æ
mў-op-or-ŏ-i′-dēs
Mў-op′-or-um
mў-os-o′-tid-if-lo′-ra
Mў-os-o-tid′-i-um
Mў-os-o′-tis*
mў-os-o-tŏ-i′-des
Mў-os-u′-rus
Myr′-cĭ-a
my-rĭ-ac-anth′-a*
My-rĭ-ad-e′-mus
My-rĭ-ap′-od-a
Myr-i′-ca
Myr-i-ca′-cĕ-æ
Myr-i-ca′-rĭ-a
myr-i-cŏ-i′-dēs
my-ri-oc-ar′-pum
My-rĭ-oc-eph′-al-us
My-rĭ-oph-yl′-lum
My-rĭ-op′-ter-is
my-rĭ-os-tig′-ma
Myr-is′-tic-a
myr-is-tic-æ-for′-mis
Myr-is-tic′-ĕ-æ
Myr-ob-al′-an-us*
Myr-ob-ro′-ma
Myr-o′-dĭ-a
Myr-os-per′-mum
Myr-ox′-yl-on
Myr′-rhis
Myr′-sin-e
Myr-sin′-ĕ-æ
Myr-sin-i′-tēs
Myr-siph-yl′-lum
Myr-stiph-yl′-lum
Myr-ta′-cĕ-æ
myr-tif-ol′-ĭ-a
myr-til-lŏ-i′-dēs
Myr-til′-lus
myr-tŏ-i′-dēs
Myr′-tus
my-so-ren′-sis
mys-tac′-in-um
my-su-ren′-sis
My-til-as′-pis
Myx′-a
Myx-om-yc-e′-tēs
Myz′-us

Nab′-al-us
Nac-ib-e′-a
Næg-el′-ĭ-a
næg-el-ĭ-ŏ-i′-dēs
Næ′-nĭ-a
næ -vĭ-um
Nag-ei′-a
Na′-gi
Nai-ad-a′-cĕ-æ
Na′-ma
na-ma-quen′-sis
na′-na
Nan-di′-na
Nan-ki-nen′-sis
Nan′-norh-ŏps
Na-no′-dēs
Na-pæ′-a
na-pel-lŏ-i′-dēs
Na-pel′-lus
Na′-pi
na-pif-or′-mis
Nap-o-le-o′-na
Nar-av-e′-lĭ-a
nar-bo-nen′-sĕ
nar-cis′-sif-lo-ra
nar-cis-sŏ-i′-dēs
Nar-cis′-sus
Nar′-da
Nar-dos′-mĭ-a
Nar-dos′-tach-ys
nar-the-cĭ-ŏ-i′-dēs
Nar-the′-cĭ-um
Nar′-thēx
Nas-myth′-ĭ-a
Na′-so
Na-so′-nĭ-a
Nas-tur′-tĭ-um
na-su′-tum
nat-al-en′-sis
na-ta-lit′-ĭ-us
nat′-ans
Na-tĭ-o′-nis
Nat′-rix
Nau′-clĕ-a
Naum-bery′-ĭ-a
Nau′-plĭ-us

Nau-til-oc′-al-yx
Nav-ar-ret′-tĭ-a
Nav-e′-nĭ-a
na-vic′-ul-a
na-vic-ul-a′-ris
Ne-æ′-i
Nĕ-æ′-ra
nĕ-a-pol-it-a′-num
neb-ro′-den-sis
neb-ul-o′-sa
nec-a′-trix
Nec-tan′-dra*
Nec-tar-ob-oth′-rĭ-um
Nec-tar-os-cor′-dum
Nēc′-trĭ-a
Nēc-trĭ-a′-cĕ-æ
Nēc′-tris
Neem′-da
ne-glec′-tus
Neg′-un-do
neil-gher-ren′-sĕ
Neil′-lĭ-a
Neip-perg′-ĭ-a
Neit-ner′-ĭ-i
Ne′-ja
Nel-i′-sĭ-i
Nel-it′-ris
Nel-so′-ni
nel-um′-bĭ-if-ol′-ĭ-um
Nel-um′-bĭ-um
Ne-mac-o′-nĭ-a*
Ne-mas′-tyl-is
Ne-mat-anth′-us
Ne-mat′-in-a
Ne-mat-oc′-er-as
Ne-mat-oph-yl′-lum
Ne-mat-os-tig′-ma
Ne′-mă-tus
Nem-ĕ-oph′-il-a
Nem-es′-ĭ-a
Ne′-mĭ-a
Ne-mop-anth′-ēs
Nem-oph′-il-a*
nem-or-a′-lis
nem-or-o′-sa
nem′-or-um
Ne-mos′-tyl-is
Ne′-mu
Neng′-a
Neng-el′-la
ne-nu′-phar
nĕ-ob-or-ĭ-en′-sis
nĕ-oc-al-e-don′-ic-um
nĕ-ŏg-*uin*-e-en′-sĕ
Nĕ-og′-yn-e
Nĕ-ol-ex′-is
nĕ-om-on-ta′-num
Nĕ-ot′-tĭ-a
Nĕ-ot-tid′-ĭ-um
Nĕ-ot′-tĭ-ĕ-æ
Nĕ-ot-top′-ter-is
nep-a′-len-sis
nep-au-len′-sis
Ne-pen-tha′-cĕ-æ
Ne-pen′-thēs

Words derived from Latin and Greek (i.e., all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in pain; au as *ou* in house; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

ne-pen-thŏ-ĭ′-dēs
Nep′-et-a*
nep-et-æ-fol′-ĭ-a
nep-et-ŏ-ĭ′-dēs
Neph-el-aph-yl′-lum
Neph-el′-ĭ-um
Neph-ran′-dra*
Neph-ran-the′-ra
neph-ro-dĭ-ŏ-ĭ′-dēs
Neph-ro′-dĭ-um
Neph-rol′-ep-is
Neph-ros-per′-ma
Neph′-thyt-is
Nep-tic′-ul-a
Nep-tu′-nĭ-a
Ne-rĭ-e′-ne
Ne′-rĭ-i
ne-rĭ-if-ol′-ĭ-a
ne-rĭ-if-or′-mis
ne-ri-næ-flo′-rum
Ne-ri′-ne
ne-ri-nif-lo′-rum
Ner-is′-sa
Ne′-rĭ-um
Ner′-ter-a
Ner-ter′-ĭ-a
ner-vo′-sum
Ne-sæ′-a
Neu-beck′-ĭ-a
neu-berg-en′-sĕ
Neu-be′-rĭ-a
Neu-ber′-ti
Neu-dorf′-ĭ-a
Neu-man′-nĭ-a
Neu-man-nĭ-a′-na
Neu-rad′-ĕ-æ
Neu-ro′-dĭ-um
Neu-rol-æ′-na
Neu-rol-o′-ma
Neu-rop′-ter-a
Neur-os-per′-ma
Neur-ot′-er-us
Neus-tan′-thus
neus′-trĭ-a
nev-a-den′-sis
Ne′-vi-i
Nev-il′-lĭ-æ
New-ber′-ry-i
New-bould′-ĭ-a
New-el′-li
New-man′-ĭ-i
Ney-perg-ĭ-a′-na
Nhan-dir-o′-ba
Nhan-dir-o′-bĕ-æ
Ni′-bung
ni-cæ-en′-sĕ
Nic-an′-dra
Nick-el′-li
Nic-ol-a′-i
Ni-co-tĭ-a′-na
ni-co-tĭ-a-næ-fol′-ĭ-um
nic′-tit-ans
nid-path-en′-sis
Ni-dul-a′-ri-um
ni′-dus
Ni′-dus-av′-is
Nie-buh′-rĭ-a
Nier-em-berg′-ĭ-a
Nig-el′-la
Nig-el-las′-trum
nig-el-lif-lo′-ra
nig′-er
nig′-ra
nig-ra′-tum
nig-res′-cens
nig-ric-a′-na
nig′-ric-ans
nig-ric-or′-nis
Nig-ri′-na
nig′-rip-ēs
nig-ri′-ta
nig′-rum
nik-o-en′-sĕ
Nil
ni-lag-er′-ic-um
ni-lo′-tic-a
Nĭ′-ob-e
Nĭ′-pa
Ni-pa′-cĕ-æ
Niph-æ′-a
Niph′-et-os
Niph-ob′-ol-us
Niph-op′-sis
Nis-so′-lĭ-a
nit′-ens
nit′-id-a
niv-a′-lis
niv′-ĕ-a
Niv′-en-i
Niv-en′-ĭ-a
niv-o′-sus
No-ack′-ĭ-i
no-bil′-ĭ-or
no′-bil-is
no-bil-is′-sim-us
no-bil′-ĭ-us
No′-bla
No-ble-a′-num
Noc′-ca
Noc-cæ′-a
noc-til-u′-ca
Noc′-tu-a
Noc′-tu-æ
Noc′-tu-id-æ
Noc-tu-i′-na
Noc-tur′-ni
no-da′-tum
no-dif-lo′-ra
no-do′-sa
Noi-set′-tĭ-a
Noi-set-tĭ-a′-na
Nol-a′-na
Nol-a-na′-cĕ-æ
no′-li-me-tan′-ger-e
No-li′-na
Nol-lĭ-a
Non-al-e′-li-a
Non′-ĕ-a
Non′-ne-a
non-scrip′-ta
noot-ka-ten′-sis
No-pal′-e-a
No-ran′-tĕ-a
Nord-man′-nĭ-a
Nord-man-nĭ-a′-na
Nor-man-by-a′-na
Nor-man-by′-i
Nor′-na
Nor-ōn′-hæ
Nor-te′-nĭ-a
North-ĭ-a′-na
not-a′-tus
Not-el-æ′-a*
Noth-och-læ′-na
Noth-oc-læ′-na
Noth-ol-æ′-na
Noth-ol-i′-rĭ-on
Noth-os-cor′-dum
No-thri′-a
Not-ĭ-oph′-rys
No-tod-ont′-id-æ
Not-on-ĭ-a′-na
Not-os-par′-tĭ-um
No-ty′-li-a
nov′-æ-ang′-li-æ
nov′-æ-bel′-gi-æ
Nov′-æ-Zeal-and′-ĭ-æ
nov-eb-or-ac-en′-sĕ
Nov-ol-li-a′-na
No-wod-wor′-sky-a
nu-bie′-ol-a
nu-big′-en-um
nuc-if′-er-um
nuc′-um
nu′-da
nu-da′-ta
nu-dic-au′-lis
nu-dif-lo′-rum
Num-id′-ic-a
num-is-ma′-tus
Nūm-mul-a′-rĭ-a
nūm-mul-a′-rĭ-æ-fol′-ĭ-a
Nun-nēz-ha′-ri-a
Nun-nez′-ĭ-a
Nu′-phar
nu′-tans
nut-ka-en′-sis
nut-ka′-na
Nut-tal′-lĭ-a
Nut-tal-lĭ-a′-na
Nut-tal′-lĭ-i
Nuyt′-sĭ-a
Nyc-ta-gin′-ĕ-æ
Nyc-ta-gin′-i-a
nyc-ta-gin-if-lo′-ra
Nyc-tanth′-es
Nyc-ter′-in-a
Nyc-ter-in′-i-a
Nyc-ter′-i-um
nyc-tic′-al-us
Nyc-toc′-al-os
Nyl-and′-ĭ-a
Nym-phæ′-a
Nym-phæ-a′-cĕ-æ
nym-phæ-if-ol′-i-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *a*p-art′; ā as in ps*ā*′-lmist; ĕ as in sl*e*n′-der; ē as in v*ē*′-ined; ĭ as in th*ĭ*n; ī as in mach-*ī*′-nist; ŏ as in r*o*t′-ten; ō as in v*ō*′-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*u*′-ler; ẏ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n, au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

nym-phæ-ŏ-i′-dēs
Nys′-sa
Nys-sa′-cĕ-æ

Oakes′-ĭ-a
ob-co′-nic-a
ob-cor-da′-tus
ob-cor-del′-lum
Ob-el-is-ca′-rĭ-a
O-ber-on′-ĭ-a
Ob-e′-sĭ-a
ob-e′-sum
ob-fus-ca′-ta
ob-li′-qua
ob-li-qua′-tum
ob-lit-er-a′-ta
ob-lon′-ga
ob-lon-ga′-tum
ob-lon-gif-ol′-ĭ-a
ob-ov-a′-ta
ob-ry-za′-tum
ob-scu-rel′-la
ob-scu′-rus
ob-sol-e′-tus
ob-tu′-sa
ob-tu-san′-gul-um
ob-tu-sa′-tum
ob-tu-sif-ol′-ĭ-a
ob-tu-sil′-ob-a
ob-tu-sil-ob-a′-ta
ob-val-la′-ris
ob-val-la′-tus
Oc-a′-næ
oc-cid-en-ta′-lis
oc-cul-ta′-na
o-ce-an′-ic-a
oc-el-la′-na
oc-el-la′-ta
Och′-na
Och-na′-cĕ-æ
o-chra′-cĕ-a
O-chran′-the*
o-chrè-a′-tum
O-chroc-ar′-pus
o-chrol-eu′-ca
O-chro′-ma
O-chrop′-ter-is
O-chro′-sĭ-a
o-cim-ŏ-i′-dēs
O′-cim-um
Oc-of-e′-a
Oc-tad-es′-mĭ-a
oct-an′-dra
oc-tho′-dēs
Oc-to-mel′-es
Oc-to-mer′-ĭ-a
oc-to-pet′-al-a
oc-to-phyl′-lum
oc-ul-a′-tus
Oc′-ul-us
Oc′-ul-us-so′-lis
o-cym-if-ol′-ĭ-a
o-cym-ŏ-i′-dēs

O′-cym-um
O′-cy-pus
Od-i-er′-ĭ-a′-na
Od-on-tad-e′-nĭ-a*
Od-on-tar′-rhen-a
od-on-ti′-tēs
Od-ont-oc-ar′-pa
od-on-toch-i′-lum
Od-on-tog-lōs′-sum
Od-on-tol-o′-ma
Od-on-ton-e′-ma
Od-on-tos-o′-rĭ-a
Od-on-tos-per′-mum
od-o′-ra*
od-o-ra′-ta
od-o-ra-tis′-sim-a
Œ-ce-oc′-lad-ēs
Œd-e′-mon-e
Œd′-er-a
Œn-ec′-tra
Œn-ec-tri′-na
Œn-oc-ar′-pus
œn-oph′-il-a
Œn-oth-e′-ra*
Œn-oth-e′-ræ
Oër-sted′-ĭ-i
of-fic-i-na′-lis
of-fic-i-na′-rum
Of′-ti-a
O-hig-gin′-sĭ-a
o-hi-o-en′-sĕ
*Oh-len-dorf′-f*ĭ-a
O-i′-dĭ-um
Ol-ac-in′-ĕ-æ
Ol′-ax
Olb′-ĭ-a
olb-ĭ-en′-sis
Old-en-land′-ĭ-a
Old-field′-ĭ-a
Ol′-ĕ-a
Ol-ĕ-a′-cĕ-æ
ol-ĕ-æ-fol′-ĭ-a
Ol-ĕ-an′-der
Ol-ĕ-an′-dra
Ol-ĕ-a′-rĭ-a
Ol-ĕ-as′-ter
ol-ĕ-if′-er-a
ol-ĕ-if-ol′-ĭ-a
ol′-ens
ol-ĕ-ŏ-i′-dēs
ol′-ens
ol-er-a′-cĕ-a
Ol-fer′-sĭ-a
Ol′-gæ
ol-ig-an′-tha*
Ol-ig-oc-ar′-pha
ol-ig-oc-ar′-pus
Ol-ig-os′-cĭ-as
Ol-ig-os′-ma
ol-ig-os-per′-ma
ol-ig-ot′-rich-um
ol-it-o′-rĭ-a
ol-i-va′-cĕ-us
ol-i-væ-for′-mis
ol-i-va′-ris

Ol-iv-e′-ri
Ol-iv-e′-rĭ-a′-na
Ol-us-a′-trum
ol-ym′-pic-um
Om-al-anth′-us
O-men-ta′-rĭ-a
om-nil-ac′-er-um
om-niv′-or-a
Om-or-i′-ka
Om-phal-an′-drĭ-a*
Om-phal′-ĕ-a
Om-phal′-ĭ-a
Om-phal-ob′-ĭ-um
Om-phal-oc-oc′-ca
Om-phal-o′-dēs
On-ag-ra′-rĭ-ĕ-æ
on-cid-ĭ-ŏ-i′-dēs
On-cid′-ĭ-um*
On-coc-y′-clus
On-cor-rhyn′-chus
On-cos-per′-ma
On-is′-cid-æ
On-is′-cus
On-i′-tēs
On-ob-ro′-ma
On-ob′-rych-is
on-ob-rych-ŏ-i′-dēs
On-oc′-lĕ-a
on-oc-lĕ-ŏ-i′-dēs
On-o′-nis
on-op-or′-din-is
On-op-or′-don
On-op-or′-dum
On-os′-er-is*
On-os′-ma
on-os-mæ-flo′-ra
On-os-mo′-dĭ-um
on-us′-tum
on-ych′-in-a
On-ych′-ĭ-um*
O-os′-por-a
op-a′-ca
Op′-al-us
Op-er-cul-a′-rĭ-a
op-er-cul-a′-ta
Oph-el′-ĭ-a
Oph′-el-us
Oph-ĭ-oc-ar′-ŷ-on
Oph-ĭ-oc-aul′-on
Oph-ĭ-od-er′-ma
Oph-ĭ-og-lōs-sa′-cĕ-æ
Oph-ĭ′-og-lōs′-sĕ-æ
oph-ĭ-og-lōs-sŏ-i′-dēs
Oph-ĭ-og-lōs′-sum*
Oph-ĭ-op-ō′-gŏn
Oph-ĭ-or-rhi′-za
Oph-ĭ-ox′-yl-on
Oph-ryd′-ĕ-æ
Oph′-rys
Op-lis′-men-us
Op-loth-e′-ca
Op-op′-on-ax
Op-or-an′-thus
op-pos-it-if-ol′-ĭ-um
op-ul-if-lo′-ra

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in slĕn′-der; ē as in v*ē′*-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in rŏt′-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭ*l; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

op-ul-ŏ-i′-dēs
Op′-ul-us
Op-un′-tĭ-a
Or-a′-nĭ-a
Orb′-ĕ-a
orb-ic-ul-a′-ris
orb-ic-ul-a′-ta
Or-bi-gny-a′-nus
or-bo′-na
Orch-es′-tēs
orch-id′-ĕ-a
Orch-id′-ĕ-æ
orch-id-if-or′-mis
Orch-id′-ĭ-um
orch′-id-ŏ-i′-dēs
orch′-ĭ-ŏ-i′-dēs
Orch′-is
Ord-ĭ-a′-nus
or-ĕ-ad′-ēs
or-eg-a′-na
Or-el′-i-a
Or-el-la′-na
or-en-o-cen′-sĕ
Or-ĕ-och′-ar-is
Or-ĕ-oc′-om-e
Or-ĕ-od-aph′-ne
Or-ĕ-od-ox′-a
Or-ĕ-op′-an-ax
Or-ĕ-oph′-il-a
or-gan-en′-sis
or-gy′-al-is
Or-gyi′-a
or-ĭ-en-ta′-lis
or-i-gan-if-ol′-ĭ-a
Or-i′-gan-um*
or-in-o-cen′-sĕ
O-ri-thal-i′-a
O-ri-thyi′-a
or-ix-en′-sĕ
Or-moc-ar′-pum
Or-mo′-sĭ-a
or-na-tis′-sim-um
or-na′-tum
or-nif-ol′-ĭ-a
Or-ni-tha′-rĭ-um
Or-ni-thid′-ĭ-um
Or-ni-thoc-eph′-al-us
Or-ni-thoch-i′-lus
Or-ni-thog′-al-um*
Or-ni-thog-lōs′-sum
or-ni-thop-od′-um
Or-ni-thop′-ter-is
Or-ni′-thop-us
or-ni-thorh-yn′-chum
Or-ni-thox-anth′-um
Or-ni′-troph-e
Or′-nus
Or-ob-anch-a′-cĕ-æ
Or-ob-anch′-e
Or-ob-el′-la
or-ob-ŏ-i′-dēs
Or′-ob-us
Or-on′-tĭ-ĕ-æ
Or-on′-tĭ-um
Or-oph-o′-ma
Or-oth-am′-nus
Or-ox′-yl-um
Orph-an-id′-ĕ-a
Orph-an′-id-is
Orph′-ĭ-um
Or-si′-ni-i
Ort-gies′-i
Ort-gies′-ĭ-a
Ort-gies-ĭ-a′-na
Ort-gies′-ĭ-i
orth-an′-tha
Orth-oc-ar′-pus
Orth-oc′-er-as
Orth-och-i′-lus
orth-op-lec′-tron
Orth-op-o′-gōn
Orth-op′-ter-a
Orth-os′-iph-ōn
Orth-os-tem′-ma
Orth-ros-anth′-us
Or-va′-la
Or-y′-za
Os-beck′-ĭ-a
Os-beck′-ĭ-i
Os-born′-ĭ-i
Os-kamp′-ĭ-a
Os-man′-thus
Os-mo′-dĭ-um
Os-mun′-da
os-mun-da′-cĕ-um
Os-sæ′-a
os-sif′-rag-um
Os-tĕ-os-per′-mum
os-trĕ-æ-for′-mis
os-trĕ-a′-tus
Os-trow-ski-a′-na
Os-tru′-thĭ-um
Os′-trў-a
Os-y-a′-na
Os′-yr-is
O-tac-an′-thus
Ot-ak′-sa
Ot-an′-dra
O-tan′-thus
O-ta′-rĭ-a
Oth-e′-ra
Oth-on′-na
Oth-on-nop′-sis
O-tid′-ĭ-a
O-til′-is
O-ti-orh-yn′-chus
O-ti′-tēs
O-toch-i′-lus
O-top′-ter-a
O-tos-tem′-ma
Ot-tel′-i-a
Ot-to-nĭ-a′-na
Ot-to′-nis
Our′-eg-ou
Ou-rĭ′-sĭ-a
Ou-rou-pa′-ri-a
Ouse-ley-a′-na
Ou-tram-ĭ-a′-na
Ou-vir-an′-dra
o-va-lif-ol′-ĭ-a
o-va′-lis
o-va′-ta
o-va-tif-ol′-ĭ-a
Ovie′-da
o-vif′-er-a
o-vig′-er-um
O′-vil-la
ow-a′-ri-en′-sis
Ox-al-id′-ĕ-æ
ox-al-id-if-ol′-ĭ-a
Ox′-al-is
ox-ў-ac-an′-tha*
ox-ў-ac-an-thif-ol′-ĭ-a
ox-ў-ac-an-thŏ-i′-dēs
Ox-ў-an′-thus
Ox-yb′-aph-us
Ox-yc-ar′-pus
ox-yc-ed′-rus
Ox-yc′-er-os
Ox-yc-lad′-ĭ-um
ox-yc-oc-cŏ-i′-dēs
Ox-yc-oc′-cus
Ox-yd-en′-dron
Ox-yg-o′-nĭ-um
ox-yg-o′-nus
Ox-yl-ob′-ĭ-um
Ox-yp-et′-al-um
ox-yph-yl′-lum
ox-ys-ep′-al-a
Ox-ys′-por-a
Ox-ys-tel′-ma
Ox-yt′-rop-is
Ox-ў-u′-ra
Ox-ў-u′-ris
Oz-oph-yl′-lum
Oz-oth-am′-nus

Pach-id-en′-dron
Pach-i′-ra
Pach-ou′-li
pach-ў-an′-tha*
pach-yb-ul′-bus
Pach-ych-i′-lus
Pach-yd-er′-is
Pach-yl-o′-ma
Pach-yl′-oph-us
Pach-y′-ne
Pach-yn-e′-ma
Pach-yn-eur′-um
pach-yph-lo′-a
Pach-yph-yl′-lum
Pach-yph′-yt-um
Pach-yp-od′-ĭ-um
pach-yp′-ter-a
Pach-yrh-i′-zus
Pach-y′-sa
Pach-ys-an′-dra
Pach-ys′-tach-ys
Pach-ys-tig′-ma
Pach-ys′-tim-a
Pach-ys′-tom-a
pach-ў-u′-ra
pa-cif′-ic-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

pad-el′-la
Pad′-i
Pad′-ĭ-a
pad-if-ol′-ĭ-us
Pad′-us
Pæ-de′-rĭ-a
Pæ-der-o′-ta
Pæ-o′-nĭ-a
pæ-o-nif-lo′-rum
Pæs′-ĭ-a
pa-ga′-na
Pa′-gin-a
Pa-hu′-dĭ-i
Paiv′-æ
pal-æs-ti′-num
Pa-laf-oæ′-ĭ-a
Pal-a′-va
pal-e-a′-cĕ-a
Pal′-ĕ-æ
pal-em-ban′-ic-us
Pal-ĕ-ol-a′-rĭ-a
pal-ĕ-ol-a′-ta
Pa-li-av-a′-na
Pal-ic-ou′-re-a
Pal-in-u′-ri
Pal-is-o′-ta
Pal-ĭ-u′-rus
Pal-las′-ĭ-a
Pal-las-ĭ-a′-na
Pal-las′-ĭ-i
Pal-la′-vĭ-a
Pal-lav-i-ci′-ni-a
Pal′-len-is
pal′-lens
pal-les′-cens
pal-lĭ-a′-tus
pal′-lid-a
pal-lid-if-la′-vens
pal-lid-if-lo′-ra
pal-lid-if-ol′-ĭ-us
pal-lid-is-pi′-na
pal-lid-iv-e′-nĭ-um
pal-lid′-ul-us
Pal-ma′-cĕ-æ
Pal′-mæ
pal-ma-tif′-id-um
pal-ma′-tum
Palm′-er-i
Pal-met′-to
Palm′-ĭ-a
Pal-mi′-ta
Pal-ton′-ĭ-um
pal-u-do′-sus
Pal-um-bi′-na
pal-us′-tris
Pan-æ′-tĭ-a
pan-am-en′-sĕ
Pan′-ax
Pan′-cher-i
Pan-crat′-ĭ-um
Pan′-dac-a
Pan-dan′-ĕ-æ
pan-dan-if-ol′-ĭ-um
pan′-dan-ŏ-i′-dēs
Pan′-dan-us
pan-do-ræ-fol′-ĭ-a
Pan-do′-rĕ-a
pan-du-ra′-ta
Pan-gĭ-a′-cĕ-æ
pa-nic-ul-a′-ta
pa-nic-ul-ig′-er-a
Pa′-nic-um
Pan-iz-zi-a′-nus
pan-nif-ol′-ĭ-us
pan-non′-ic-us
pan-no′-sa
pan-the-ri′-num
pan-toth′-rix
Pap-a′-ver
pap-a-ver-a′-cĕ-a
Pap-a-ver-a′-cĕ-æ
pap-a-ver-æ-flo′-ra
Pap-a′-ver-is
Pap-ay′-a
Pap-ay-a′-cĕ-æ
Paph-in′-ĭ-a
Pa-pil′-ĭ-o
pa-pil-ĭ-o-na′-cĕ-a
Pa-pil-ĭ-o-na′-cĕ-æ
Pa-pil-ĭ-o′-nid-æ
Pap-il′-læ
pap-il-la′-ris
pap-il-lo′-sa
Pap′-ul-æ
pap-y-rac-an′-tha
pap-y-ra′-cĕ-a
Pap-y′-rĭ-a
pap-y-rif′-er-a
Pap-y′-rus
Par-ac-ar′-ў-um*
Par-ac-le′-tus
Par-ad-i-san′-thus
Par-ad-i′-sĕ-æ
Par-ad-i′-si
Par-ad-i′-sĭ-a
par-ad-i′-sĭ-ac-a
par-ad-ox′-a
Par-ag-ram′-ma
par-ag-ua-rĭ-en′-sis
par-ag-uay-en′-sis
par-aĭb′-ic-a
Par-al′-ĭ-as
par-al-le-lop-ip′-ed-us
Par-an-eph-el′-ĭ-us
Par-an′-om-us
Par-ap-et-al-if′-er-a
par-as-i′-tic-a
Par-as-tran′-thus
Par-at-rop′-ĭ-a
Par-cel′-li
Par-dal-ĭ-an′-chēs
par-dal-i′-na
Par-dan′-thus
Par′-dĭ-a
par′-din-a
Par-duy′-na
Par-ech-i′-tēs
Par-ei′-ra
Par-ĭ-et-a′-rĭ-a
Pa-ri-na′-rĭ-um
Par′-is
Par-ish′-ĭ-i
Par-i′-tĭ-um
Par′-ker-i
Par-ker′-ĭ-a
Parkes′-ĭ-i
Park′-ĭ-a
Par-kin-so′-ni
Par-kin-so′-nĭ-a
Par-kin-so′-nĭ-a′-num
Parks′-ĭ-i
Par-la-to-re-a′-na
Par-la-to′-re-i
Par-men-ti-e′-ra
Par-men-ti-e′-ri
Par-men-ti-ĕ-rĭ-a′-na
Par-nas′-sĭ-a
par-nas-sif-ol′-ĭ-a
Par-och′-et-us
Par-on-ych′-ĭ-a
Par-on-ych′-ĭ-ĕ-æ
par-on-ych-ŏ-i′-dēs
Par′-qui
Par-ri′-tæ
Par-rot′-ĭ-a
Par′-ry-a
Par-ry-a′-na
Par′-ry-i
Par-son′-sĭ-a
Par-son′-sĭ-i
Par-then-ei′-on
par-then-if-ol′-ĭ-um
Par-then′-ĭ-um
par-ti′-tus
Par-vic-or-o-na′-ti
par-vif-lo′-ra
par-vif-ol′-ĭ-a
par-vis′-sim-um
par′-vul-a
par′-vum
Par-yph-os-phæ′-ra
Pas-cal′-ĭ-a
Pas′-pal-um
Pas-sif-lo′-ra
Pas-sif-lo′-rĕ-æ
Pass-ing-ham′-ĭ-i
Pas-tin-a′-ca
pat-ag-o′-nic-a
Pat-ag-o′-nul-a
Pat-an′-ĭ-a
pat-av-i′-na
Patch-ou′-li
pat-el-la′-ris
pat′-ens
pat-en-tir-os′-tris
Pat-er-so′-ni
Pat-er-so′-nĭ-a
Pat-ĭ-en′-tĭ-a
Pat-i′-ni
Pat-i′-nĭ-i
pat-oc-o-cen′-sis
Pat-ri′-nĭ-a
Pat-ri′-sĭ-a
Pat-tis-o-nĭ-a′-num
Pat-to′-nĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in *psā′-lmist*; ĕ as in *slĕn′-der*; ē as in *vē′-ined*; ĭ as in *thĭn*; ī as in *mach-ī′-nist*; ŏ as in *rŏt′-ten*; ō as in *vō′-ter*; ŭ as in *pow′-er-fŭl*; ū as in *rū′-ler*; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* **This word is discussed at the end of the Pronouncing Dictionary.**

Pronouncing Dictionary—*continued.*

Pat-to-nĭ-a′-na
pat′-ul-um
pau-cif-lo′-ra
Paul-li′-nĭ-a
Paul-ow′-nĭ-a
pau-per′-cul-a
Pav-et′-ta
Pa′-vĭ-a
Pav-o′-nĭ-a
Pav-o′-nĭ-i
pa-vo-ni′-na
pa-vo′-nĭ-um
Pax-to′-ni
Pax-to′-nĭ-a
Pax-to-nĭ-a′-na
Pea-cock′-ĭ-i
Peak-ĭ-a′-num
Pear′-ce-a
Pear′-ce-i
Pec-ot′-tĕ-i
pec-tin-a′-cĕ-a
pec-tin-a′-ta
pec-tin-ic-or′-nis
pec-tin-if′-er-us
Pec′-tis
pec-tor-a′-le
Pe-dal-in′-ĕ-æ
Pe-dal′-ĭ-um
ped-a′-tum
ped-em-on-ta′-num
Ped-i-cul-a′-ris
Ped-i-lan′-thus*
Ped-i′-lĕ-a
Ped-i-lo′-nĭ-a
Ped-i-lo′-num
Pe-dro′-sĭ-a
ped-un-cul-a′-ris
ped-un-cul-a′-ta
ped-un′-cul-i
ped-un-cul-o′-sa
Peep′-la
Pe′-gan-um
Peir-esc′-ĭ-a
pe-kin-en′-sis
pel-ar-go-nĭ-if-lo′-rum
Pel-ar-go′-nĭ-um
Pel-ec-yph′-or-a
Pel-eg-ri′-na
Pel-ex′-ĭ-a
pel-ic-a′-num
pel-ĭ-og-ram′-ma
pel-ĭ-ol-o′-sum
pel-ĭ-orh-yn′-chus
Pel-ĭ-os-an′-thēs
Pel′-lĕ-a
Pel-li-o′-nĭ-a
pel-lu′-cens
pel-lu′-cid-a
Pe-lon-as′-tēs
Pel-o′-rĭ-a
Pel-tan′-dra
Pel-tan-the′-ra
Pel-ta′-rĭ-a
pel-ta′-ta
pel-tid′-ĕ-um
pel-tif-ol′-ĭ-a
Pel-toph′-or-um
Pel-tos-tig′-ma
pel-vif-or′-mis
Pem-phi′-gus
Pe-næ′-a
Pe-næ-a′-cĕ-æ
pen′-dul-a
pen-dul-if-lo′-rum
pen-dul-i′-na
pe-nic-il-la′-ta
Pe-nic-il′-lĭ-um
pen-na′-ta
pen-na-tif-ol′-ĭ-us
pen-nig′-er-um
pen-nin-er′-vis
Pen-nis-e′-tum
penn-syl-va′-nic-um
pen′-nul-a
Pen-rhos-ĭ-en′-sis
Pen-ste′-mōn
Pent-ach-æ′-ta
pen-tach-ro′-mum
Pent-ad-ac′-tyl-is
Pent-ad-ac′-tyl-on
Pent-ad-es′-ma
pent-ag-o′-na
Pent-ag-o′-nĭ-a
pent-ag′-yn-a
Pent-ag-yn′-ĭ-a
pent-an′-dra
pent-an′-dræ
Pent-an′-drĭ-a
pent-an′-thus
Pent-ap-e′-ra
pent-ap-et-al-ŏ-i′-dēs
Pent-ap′-et-ēs
Pent-aph-il′-trum
Pent-aph-rag′-ma
Pent-aph-yl′-la
Pen-taph-yl′-lon
Pent-ap′-ter-a
Pent-ap-ter-yg′-ĭ-um
Pent-arh-aph′-ĭ-a
Pen′-tas
Pen-tat-ax′-is
Pent-land′-ĭ-a
Pent-land′-ĭ-i
Pent-ste′-mōn
Pent-ste′-rĭ-a
Pentz′-ĭ-a
Pep-er-id′-ĭ-um
Pep-er-o′-mĭ-a
Pep-in′-ĭ-a
Pep′-lis
pep-lŏ-i′-dēs
Pep′-o
Per-alt′-ĕ-a
Pe-ram′-ĭ-um
Pe-ran-e′-ma
per-bel′-la
per-cus′-sum
Per-di′-cĭ-um
Per′-dix
per-eg-ri′-num
Per-eir′-ĭ-a
per-e′-leg-ans
per-en′-nans
per-en′-nis
Per-esk′-ĭ-a
per-esk-ĭ-æ-fol′-ĭ-a
Pe-re′-zĭ-a
per-fol-ĭ-a′-ta
per-for-a′-tum
Per-gul-a′-rĭ-a
per-ĭ-ac-an′-thus*
Per-ib-œ′-a
Per-ic-al′-lis
Per-ic-al-ym′-na
Per-ic-lym′-en-um
per-i-cul-a′-rum
per-i-cul-o′-sa
Per-ic-y′-cla
Per-id-er′-mĭ-um
Per-il′-la
Per-il-o′-mĭ-a
Per-iph′-an-ēs
Per-iph-rag′-mos
Per-ip′-loc-a*
per ip-loc-a-fol′-ĭ-a
Per-is-por-a′-cĕ-i
Per-is-por-ĭ-a′-cĕ-æ
Per-is-por-ĭ-a′-cĕ-i
Per-is-ter′-ĭ-a
Per-is-troph′-e
Per-is′-tyl-is
Per-ith-e′-cĭ-um
Per-it′-om-a
Per-it-ym′-bĭ-a
per-mix′-ta
Per-net′-ty-a
Per-of-ski-a′-num
Per-o′-nĕ-a
Per-o′-nĭ-a
Per-on-os′-por-a*
Per-ow-ski-a′-na
per-pen′-sa
per-pus-il′-lus
Per-ral-der-ĭ-a′-num
Per-ri-nĭ-a′-na
Per-ri′-nĭ-i
Per′-ry-i
Per-se′-a
Per′-sic-a
Per′-sic-æ
per-sic-æ-fol′-ĭ-a
per-sic-if-ol′-ĭ-um
per′-sic-um
per-sol-u′-ta
Per-so-na′-tæ
Per-soon′-ĭ-a
Per-soon′-ĭ-i
per-spic′-ŭ-a
per-tu′-sum
per-u-if′-er-um
per-u-vĭ-a′-na
Pes-cat-o′-re-a
Pes-cat-o′-re-i
Pēs′-cor′-vi
Pes-om-er′-ĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: a as in *ăp-art′*: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ow* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in muscular, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Pes-tal-oz′-zæ
Pet-al-ac′-te*
Pet-al-id′-ĭ-um
pet-al-ŏ-i′-dĕ-um
Pet-al-ol′-ep-is
Pet-al-os-te′-mŏn
Pet-am′-en-ēs
pet-an′-dra
Pet-as-i′-tēs
Pet-as-os′-tyl-is
Pe-ters′-ĭ-i
pet-ĭ-ol-a′-ris
pet-ĭ-ol-a′-ta
Pet-iv-er′-ĭ-a
Pet′-ol-a
Pet-ou′-mo
Pet-ræ′-a
pet-ræ′-um
Pet-rarch′-æ
Pet′-ri
Pet-rob′-ĭ-um
Pet-roc-al′-lis
Pet-roc-ar′-ĭ-a
Pet-roc-op′-tis
Pet-rom-ar′-ul-a
Pet-roph′-il-a
Pet-roph′-ĭ-ēs
Pet-roph′-yt-um
Pet-ros-el-i′-num
Pet-ter′-ĭ-a
Pet-ung′-a
Pet-u′-nĭ-a
Peu-ced′-an-um
Peu′-mus
Pey-rous′-ĭ-a
Pez-iz′-a
Pfaf′-fĭ-a
Pfo′-ri
Pfeif′-fer-a
Pfeif-fer-el′-la
Pfeif′-fer-i
Pfeif-fer′-ĭ-a
Phac′-a
Phac-el′-i-a
phac-el-ĭ-ŏ-i′-dēs
phæ-ac-an′-tha
Phæ′-don
Phæd-ran-as′-sa
Phæn-oc-o′-dōn
Phæn-oc′-om-a
Phæn-op′-od-a
Phæn-os-per′-ma
phæ-os-te′-mŏn
Phæ-os′-tom-a
phæ′-um
Phai′-us
Pha′-jus
Phal-ac-ræ′-a
Phal-ac-rol-o′-ma
Pha-lac-rom′-es-us
Phal-æ′-na
Phal-æ-nop′-sis
Phal-ang′-i-um
Phal′-ar-is
phal-ar-ŏ-i′-dēs
Phal-e′-rĭ-a
Phal-la′-rĭ-a
Phal-loc-al′-lis
Phan-er-oph-leb′-ĭ-a
Phar-bi′-tis
Pha′-rĭ-um
Phar-nac-e′-um
Pha′-rus
phas-ĕ-ol-ŏ-i′-dēs
Phas′-ĕ-ol-us
Pheb-al′-ĭ-um
Phe-gop′-ter-is
Phe-lip-æ′-a
Phel′-los
Phen-ak-os-per′-mum
Pher-ot′-rich-is
Phi′-al-is
Phil-ad-el′-phĕ-æ
phil-ad-el′-phic-um
Phil-ad-el′-phus*
Phil-*ag-e′-rĭ*-a*
Phil-brick-ĭ-a′-na
Phil-e′-sĭ-a
Phil-e-sĭ-a′-cĕ-æ
Phil-ib-er′-tĭ-a
phil-ip-pi-nen′-sis
Phil-ip′-po-*Co-bur′-gi*
Phil-lip-ĭ-a′-na
Phil-lyr′-ĕ-a
phil-lyr-ĕ-æ-fol′-ĭ-a
phil-lyr-æ-ŏ-i′-dēs
Phil-od-en′-dron
Phil-og′-yn-e
Phil-oth-e′-ca
Phil-yd-ra′-cĕ-æ
Phil-yd′-rum
Phin-æ′-a
Phleb-ig-o′-nĭ-um*
Phleb-ĭ-oph-yl′-lum
Phleb-o′-dĭ-um
Phleg-ma′-rĭ-a
Phle′-um
Phlog-ac-an′-thus
phlog-if-lo′-ra
Phlom′-is
phlom-ŏ-i′-dēs
Phlox
phœn-i′-cĕ-us
phœn-i′-cĭ-a
phœn-i-cif-ol′-ĭ-us
phœn-i′-col-as′-ĭ-us
Phœn-i-coph-or′-ĭ-um
Phœn′-ix
Phol-id-oc-ar′-pus
Phol-id-oph-yl′-lum
Phol-id-o′-ta
Pho′-ma
Pho-niph′-or-a
Phor′-bĭ-a
Phor′-mĭ-um
Phor′-od-on
Pho-ti′-nĭ-a
Pho-ti-nop′-ter-is
Phox-an′-thus
Phrag-mat-ob′-ĭ-a
Phrag-mid′-ĭ-um
Phra-to′-ra
phryg′-ĭ-a
Phry′-ma
phry-nĭ-ŏ-i′-dēs
Phry′-nĭ-um
Phu
Phu-op′-sis
Phy-cel′-la
Phyg-an′-thus
Phyg-e′-lĭ-us
Phyl′-ic-a
phyl-ic-if-ol′-ĭ-a
phyl-ic-ŏ-i′-dēs
Phyl-lach′-ne*
Phyl-lac-ti′-nĭ-a
Phyl-lag′-ath-is
Phyl-lam′-phor-a
phyl-lan-thŏ-i′-dēs
Phyl-lan′-thus
Phyl-lar′-thron
Phyl-lau′-rĕ-a
Phyl-ler′-ĭ-um
Phyl′-lis
Phyl-li-ti′-dēs
Phyl-lob′-ĭ-us
Phyl-loc-ac′-tus
Phyl-loc′-al-yx
Phyl-loc-e′-rĕ-us
Phyl-loc′-lad-us
Phyl-loc-y′-clus
Phyl-lo′-dēs
Phyl-lo′-dĭ-um
Phyl-lod′-oc-e
phyl-log-lōs′-sum
Phyl-lol-ob′-ĭ-um
Phyl-lo′-ma
phyl-lo-man′-ĭ-ac-a
Phyl-lop-er′-tha
Phyl-los-tach′-ŷ-a
Phyl-los′-tach-ys
Phyl-los-tic′-ta
Phyl-lo′-ta
Phyl-lot-æn′-ĭ-um
Phyl-lot′-ret-a
Phyl-lox′-er-a
Phy-mat-an′-thus
phy-mat-och-i′-lum
Phy-mat-o′-dēs
phy-mat-oth-e′-le
Phy-mo′-sĭ-a
Phy′-sal-is*
phy-sal-ŏ-i′-dēs
Phy-sap′-ter-is
Phy-se-mat′-ĭ-um
Phy-sĭ-an′-thus
Phy-sid′-ĭ-um
Phy-sing′-a
Phy-soc-al-yc′-ĭ-um
Phy-soch-lai′-na
Phy-sod-ei′-ra
phy-so′-dēs
Phy-sol-ob′-ĭ-um
Phy-sop′-od-a
Phy-sos′-iph-ōn

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā′*-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Phy-sos-per′-mum
Phy-sos-teg′-ĭ-a
Phy-sos-tel′-ma
Phy-sos-tig′-ma
Phy-su′-rus
Phyt-ar-rhi′-za
Phyt-el′-eph-as*
Phyt-el-eph-u′-sĭ-ĕ-æ
Phyt-eu′-ma
Phyt-oc-re′-ne
Phyt-oc-re′-nĕ-æ
Phyt-ol-ac′-ca
Phyt-ol-ac-ca′-cĕ-æ
phyt-ol-ac-cŏ-i′-dēs
Phyt-om-y′-za
Phyt-oph′-thor-a
Phyt-op′-ti
Phyt-op′-tid-æ
Phyt-op′-tus
Phyt-ox′-is
Pi-ar-an′-thus
Pic′-ĕ-a
pich-inch-en′-sis
pic-ip′-ēs
Pi-co′-tĭ-a
Pic-rad-e′-nĭ-a
Pic′-rĭ-a
Pic-roph-læ′-um
Pic-rorh-i′-za
Pic-te′-tĭ-a
pic-tif-ol′-ĭ-a
pic-to′-rĭ-us
pic-tu-ra′-ta
pic′-tus
Pid-ding-to′-nĭ-a
Pi-er-ar′-dĭ-i
Pier′-cĕ-a
Pi′-er-is
Pig-af-et′-ta
Pil′-cher-i
Pi′-lĕ-a*
Pi-lĕ-an′-thus
pi-lĕ-orh-i′-za
Pil-grim′-ĭ-i
pil-if′-er-um*
pil-ig′-er-a
Pil-ler-ĭ-a′-na
Pi-loc-ar′-pus
Pi-loc-e′-rĕ-us
Pi-log′-yn-e
Pi-loph′-or-a
pil-o′-sa
Pil-o-sel′-la
pil-o-sel-lŏ-i′-dēs
pil-o-sis′-sim-a
pil-o-sĭ-us′-cul-a
Pil-ul-a′-rĭ-a
pil-ul-if′-er-a
Pi-lum′-na
Pi-mel′-ĕ-a
pi-mel-ĕ-ŏ-i′-dēs
Pi-men′-ta
Pim-pin-el′-la
pim-pin-el-læ-fol′-ĭ-a
Pim-pin-el-lif-ol′-ĭ-æ
Pi-na′-cĕ-æ
Pin-al′-ĭ-a
Pin-ang′-a
Pi-nar′-dĭ-a
Pi-nas′-ter
pi-nas′-tri
Pin′-cĕ-a′-na
Pin-cen-ict-it′-ĭ-a
Pinck′-ney-a
Pin′-der-i
Pin′-drow
pi′-nĕ-a
Pin-el′-lĭ-a
pi-ne-to′-rum
Pin-guic′-ul-a
pin-guif-ol′-ĭ-a
Pi′-ni
pi-nĭ-a′-rĭ-a
pi-nic-ol-a′-na
pi-nif-ol′-ĭ-a
pi-nip-er′-da
Pink′-nĕ-a
Pink′-ney-a
pin-na′-ta
pin-na-tif′-id-um
pin-na′-tif-rons
pin-na-tin-er′-va
pin-na-tis-tip′-ul-a
Pin-sa′-po
Pi′-nus
Pi-on-an′-dra
Pi-o′-nĕ-a
Pi-on-no′-tēs
Pi-oph′-il-a
Pip′-er*
Pip-er-a′-cĕ-æ
Pip-er-el′-la
pip-er-i′-ta
Pip-tad-e′-nĭ-a
Pip-tan′-thus
Pip′-toc-lai′-na
Pip-tos′-path-a
Pi-que′-ri-a
Pir-ig-a′-ra
Pir-i-que′-ta
Pir-on-neau′-a
pi-sac-om-en′-sis
pi-sa′-na
Pi-sau′-ra
Pis-ci′-dĭ-a
Pi′-si
pi-sif′-er-a
pi-soc-ar′-pa
Pi-so′-nĭ-a
Pis-sar′-dĭ-i
Pis-so′-dēs
Pis-ta′-cĭ-a
Pis′-tĭ-a
Pis-to-ri′-nĭ-a
Pi′-sum
Pit-at′-ach-e
Pit-cairn′-ĭ-a
pit-cairn-ĭ-æ-fol′-ĭ-a
Pitch′-er-i
Pith-e-coc-ten′-ĭ-um
Pith-e-col-ob′-ĭ-um
Pit-to′-ni
Pit-tos-por′-ĕ-æ
Pit-tos′-por-um
Pit-y-roph-yl′-lum
pla-ca′-ta
Plac′-e-a
Pla′-cĕ-i
Pla-co′-dĭ-um
Plac-o′-ma
Plad-e′-ra
Plag-ĭ-an′-thus*
Plag-ĭ-og-y′-rĭ-a
Plag-ĭ-o-li′-rĭ-on
Plag-ĭ-ol-ob′-ĭ-um
Plag-ĭ-oph-yl′-lum
Plan-e′-ra
pla-nic-au′-le
pla-nif-lo′-ra
pla-nif-ol′-ĭ-um
pla-nil-ab′-rĕ
plan-ta-gin′-ĕ-a
Plan-ta-gin′-ĕ-æ
Plan-ta′-gin-is
Plan-ta′-go
Plant′-ĭ-a
Plan′-tĭ-i
pla′-num
Plas-mo-dĭ-oph′-or-a
Plat-an-a′-ce-æ
plat-an-if-ol′-ĭ-um
plat-an-ŏ-i′-des
plat-an′-tha
Plat-an-the′-ra
Plat′-an-us
pla-ten′-sis
Plat-o′-nĭ-a
plat-yc-an′-tha*
Plat-yc-ap′-nos
plat-yc-ar′-pa
Plat-yc-ar′-pha
Plat-yc-ar′-pum
Plat-yc-ar′-ŷ-a
plat-yc-en′-tra
Plat-yc-er′-ĭ-um
Plat-ych-i′-lum
plat-yc′-lad-a
Plat-yc-li′-nis
Plat-yc-o′-dōn
Plat-yc-ra′-ter
plat-yg-lŏs′-sa
Plat-yl′-ep-is
Plat-yl-ob′-ĭ-um
Plat-yl-o′-ma
Plat-yl′-oph-us
Plat-ym-e′-tra
plat′-ŷ-od-on
plat′-ŷ-on-yx
Plat-yp-et′-al-um
plat-yph-yl′-la
plat-yph-yl′-los
Plat-yp′-ter-is
plat-yrh-yn′-chos
plat-ys′-path-a
Plat-ys-tach′-ŷ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined: ĭ as in th*ĭ*n; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten: ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ: ȳ as ī; æ, œ, ei, as *ai* in p*ain*: au as *ow* in h*ouse*: g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Plat-ys′-tach-ys
Plat-ys-te′-mōn
Plat-ys-tig′-ma
Plat-ys′-tyl-is
Plat-yth-e′-ca
Plat-yz-a′-mĭ-a
Plat-yz-o′-ma
Platz-man′-ni
pleb-ei′-um
Plec-os-o′-rus
Plec-toc-eph′-al-us*
Plec-toc-om′-ĭ-a
Plec-tog′-yn-e
plec-tol′-ep-is
Plec-tran-the′-ra
plēc-tran-thif-ol′-ĭ-a
plēc-tran-thŏ-ĭ′-dēs
Plēc-tran′-thus*
Plēc-tri′-tis
Plēc-tro′-nĭ-a
Plēc-tru′-rus
Plee′-a
plei-och-ro′-ma
plei-og′-on-us
Ple′-ĭ-on-e
Plei-on-e′-ma
ple-nis′-sim-us
ple′-nus
Plĕ-oc-ne′-mĭ-a
Plĕ-om′-el-e
Plĕ-op-el′-tis
Ple-os′-por-a
Ple-ro′-ma
ple-sĭ-os-o′-rum
Pleur-an′-dra
Pleur-an′-the
Pleur-id′-ĭ-um
Pleur-oc-oc′-cus
Pleur-og-ram′-me
Pleur-og′-yn-e
Pleur-op-et′-al-um
Pleur-os-per′-mum
pleur-os′-tach-ys
Pleur-oth-al′-lis
plic-a′-ta
plic-ig′-er-um
Ploc′-am-a
Ploc-og-lŏt′-tis*
Ploc-os-tem′-ma
Plo-ess′-lĭ-a
Plu′-chĕ-a
plu′-ma
plu-mæ-for′-mis
plu-ma′-rĭ-us
plu-ma′-tum
Plum-ba-gel′-la
Plum-ba-gin′-ĕ-æ
plum-ba-gin-ŏ-i′-dēs
Plum-ba′-go
plum′-bĕ-a
Plu-me′-rĭ-a
Plu-mĭ-e′-ri
plu-mo′-sa
Plu′-mul-a
Plu′-rid-ens
Plu′-sĭ-a
Plu-tel′-la
Pneu-mon-an′-the
Pŏ′-a
pŏ-ar′-um
Poc-ock′-ĭ-a
po-cul-if-or′-mis
Pod-ach-æn′-ĭ-um
pod-ag′-ric-a
Pod-al-y′-rĭ-a
pod-al-y-rĭ-ŏ-i′-dēs
Pod-an′-thēs
Pod-an′-thus
pod-ic-ar′-pum
Pod-is-o′-ma
Pod-oc-al′-lis
Pod-oc-ar′-pĕ-æ
Pod-oc-ar′-pus
Pod-ol-a′-sĭ-a
Pod-ol′-ep-is
Pod-ol-ob′-ĭ-um
Pod-op-el′-tis
pod-oph-thal′-ma
Pod-oph-yl′-lum
Pod-op′-ter-us
Pod-o′-rĭ-a
Pod-os-per′-ma
Pod-os-per′-mum
Pod-os-phæ′-ra
Pod-os-te-ma′-cĕ-æ
Pod-os-te′-mōn
Pod-os-tig′-ma
Pod-oth-e′-ca
Pœc-il-ip′-ter-is
Pœc-il-os-o′-ma
Pœp-pig′-ĭ-a
Pœp-pig-ĭ-a′-na
Pœp-pig′-ĭ-i
Pœ′-sĭ-a
pŏ-e-ta′-rum
pŏ-e′-tic-us
Pog-gen-dorf′-fĭ-a
Po-gog′-yn-e*
Po-go-nel′-la
Po-go′-nĭ-a
Po-go′-nop-us
Po-gos-te′-mōn
Pohl-ĭ-a′-na
Pohl′-ĭ-i
Poin-cĭ-a′-na
Poin-set′-tĭ-a
Poi-re′-tĭ-a
Poi-tæ′-a
Poiv′-rĕ-a
Pol-an-is′-ĭ-a
Pole-man′-nĭ-a
Pol-em-o-nĭ-a′-cĕ-æ
Pol-em-o′-nĭ-um
Pol′-ĭ-a
Pol-ĭ-an′-thēs
pol-if′-er-us
pol-if-ol′-ĭ-a
pol-ĭ-if-ol′-ĭ-a
pol-i′-ta
Pol′-ĭ-um
Pol-lic-a′-ris
Pol-lich′-ĭ-a
Pol-li′-ni-a
Poll-ver′-ĭ-a
pol-ŷ-ac-an′-tha*
Pol-ŷ-ac-tid′-ĭ-um
Pol-ŷ-ac′-tis
Pol-ŷ-ad-el′-phĭ-a
Pol-ŷ-al′-thĭ-a
Pol-ŷ-an′-drĭ-a
pol-ŷ-an′-drum
pol-ŷ-an′-tha
Pol-ŷ-an′-thēs
pol-ŷ-an′-thos
Pol-ŷ-an′-thus
Pol-yb-æ′-a
Pol-yb-ot′-rŷ-a
Pol-yc-al-ym′-ma
Pol-yc-am′-pĭ-um
Pol-yc-ar′-pa
Pol-yc-ar-pæ′-a
Pol-yc-ar′-pĭ-a
pol-yc-eph′-al-us
Pol-ych-i′-los
pol-ych-lo′-ros
Pol-yc-yc′-nis
pol-yd-ac′-tyl-a
pol-yd-ac′-tyl-on
Pol-yd-es′-mus
Pol-yg′-al-a
pol-yg-al-æ-fol′-ĭ-um
Pol-yg-al′-ĕ-æ
pol-yg-al-if-ol′-ĭ-a
pol-yg′-am-a
Pol-yg-on-a′-cĕ-æ
Pol-yg-on-as′-trum
Pol-yg-on′-at-um
Pol-yg-on′-ĕ-æ
Pol-yg-on′-ĭ-um
pol-yg-on-ŏ-i′-dēs
Pol-yg′-on-um
Pol-ym′-nĭ-a
pol-ym-orph′-um
pol′-ŷ-od-on
Pol-yp-ap′-pus
Pol-yp′-ar-a
pol-yp-et′-al-a
Pol-yph-e′-ma
pol-yph-yl′-la
pol-yp-od′-in-a
pol-yp-od-ĭ-ŏ-i′-dēs
Pol-yp-od′-ĭ-um
Pol-yp′-or-us
Pol-yp′-rem-um
Pol-yp′-ter-is
Pol-ys′-cĭ-as
pol-ys-per′-ma
Pol-ys′-por-a
Pol-ys-tach′-ŷ-a
pol-ys-tach′-ŷ-on
pol-ys-tich-ŏ-i′-dēs
Pol-ys′-tich-um
pol-ys-tic′-ta
Pol-ys-tig′-ma
Pol-yt-æ′-nĭ-um

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′-*lmist; ĕ as in sl*ĕn′-*der; ē as in v*ē′-*ined; ĭ as in th*ĭn*; ī as in mach-*ī′-*nist; ŏ as in r*ŏt′-*ten; ō as in v*ō′-*ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′-*ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Pol′-yth-rix
Pol-yt′-rich-um
pol-yx-an′-thum
Pol-yx′-en-a
Pol-yz-o′-ne
po-ma′-cĕ-a
Po-ma′-cĕ-æ
Po-mad-er′-ris
Po-ma′-rĭ-a
po-ma′-tĭ-a
Po-mat-oc-al′-pa
Po′-max
Pom-bal′-ĭ-a
Po′-mĕ-æ
Po-mel′-ĭ-ā
po-mer-i′-dĭ-ā′-num
po′-mi
po-mif′-er-a
Po-mo-na′-na
po-mo′-rum
pom-pay-an-en′-sĕ
pom-po′-nĭ-a
Pon-cel-e′-tĭ-a
pon-der-o′-sa
Pon-e′-ra
Pon-ga′-mĭ-a
Pon-ted-e-ra′-na
Pon-ted-e′-rĭ-a
Pon-ted-e-rĭ-a′-cĕ-æ
Pon-thie′-va
Pon′-tĭ-a
pon′-tic-a
Po′-pe-i
po-pul-if-ol′-ĭ-a
po-pul′-nĕ-a
Po′-pul-us*
Po-ra′-na
Por-an-the′-ra
por-cel′-lic-eps
Por-cel′-lĭ-o
Por-cel′-lus
por-ci′-na
Por-li-e′-rĭ-a
Por-os-te′-ma
Por′-pax
Por′-phyr-a
por-phyr-an′-tha*
por-phyr-a′-ta
por-phyr′-ĕ-um
por-phyr′-ĭ-o
por-phyr-oc-ar′-pon
Por-phyr-oc′-om-a
por-phyr-oph-yl′-lum
por-phyr-os′-pil-um
Por-phyr-os′-tach-ys
por-phyr-os-te′-le
por-rif-ol′-ĭ-um
por′-rig-ens
Por′-rum
Por′-tĕ-a
Por-tĕ-a′-na
Por′-tĕ-i
Por-tel′-læ
Por-ten-schla′-gĭ-a
Por-ten-schla-gĭ-a′-na
por-ten-to′-sa
Port-land′-ĭ-a
Por-tul-a′-ca
por-tul-a′-cæ-fol′-ĭ-a
Por-tul-a-ca′-rĭ-a
Por-tul-a-cas′-trum
Por-tul-a′-cĕ-æ
por-tul-a′-cif-ol′-ĭ-a
Pos-el-ger′-ĭ-i
Pos-o-que′-rĭ-a
pos′-tum-a
Pot-am-og-e′-ton
pot-am-oph′-il-a
pot-a-to′-rum
Pot-en-til′-la
Pot-en-til′-lĕ-æ
pot-en-til-lŏ-i′-dēs
Pot-e′-rĭ-ĕ-æ
Pot-e′-rĭ-um
poth′-ŏ-in-a
Poth-om-or′-phe
Poth′-os
Pott′-sĭ-i
Poul′-ter-i
Pou-par′-tĭ-a
Pou-rou′-ma
Pour-re′-tĭ-a
Pousch′-kin-i
præ-al′-ta
præ′-cox
præ-mor′-sa
præ′-nit-ens
præ-rup-to′-rum
præ′-stans
præ-tex′-tum
Pras-an′-thĕ-a*
pras-ĭ-a′-ta
pras′-in-a
pras-in-a′-ta
Pras′-in-us
Pras-oph-yl′-lum
pra-ten′-sis
Pra′-tĭ-a
prec-a-to′-rĭ-us
Preis-sĭ-a′-na
Preis′-sĭ-i
Prem′-na
Pre-nan′-thēs
Prep-tan′-the
Prep-u′-sa
Pres-cot′-ĭ-a
Pres-cot′-tĭ-a
Presl′-ĭ-a
Presl′-ĭ-a′-na
Presl′-ĭ-i
Pres-to′-ĕ-a
Pres-to′-nĭ-a
pres-ton-ĭ-en′-sis
Priest′-ĭ-i
Priest′-ley-a
Pri′-mul-a*
Pri-mul-a′-cĕ-æ
pri-mul-æ-flo′-rus
pri-mul-æ-fol′-ĭ-a
pri-mul′-in-us
pri-mul-ŏ-i′-dēs
prin′-ceps
prin′-cip-is
pri-nŏ-i′-dēs
Pri′-nos
Pri′-nus
prĭ-o-ni′-tis
Prĭ-o′-nĭ-um
prĭ-o-noph-yl′-lum
pris-mat′-ic-a
Pris-mat-oc-ar′-pus
Pritch-ar′-dĭ-a
Pritch-ar′-dĭ-i
Prit-zel′-ĭ-a
Pri′-va
prob-os-cid-a′-lis
Prob-os-cid′-ĕ-us
Pro-ce′-rus
pro-ces-sĭ-o′-nĕ-a
Prock′-ĭ-a
Proc-le′-sĭ-a
proc-le-sĭ-ŏ-i′-dēs
pro-cum′-bens
pro-cur′-rens
pro-duc′-tum
Prof-er′-ĕ-a
prof-u′-sa
Pro′-iph-ys
pro-let-el′-la
pro-lif′-er-um
pro-lif′-ic-um
Prom-en-æ′-a
Pron-ay′-a
pro′-nub-a
Prop-a′-gin-ēs
pro-pen′-dens
Pro-phyl′-la
prop-in′-qua
pro-re′-pens
Pros-ap′-tĭ-a
Pros-ar′-thēs
Pros-e′-lĭ-a
Pros-er-pin-a′-ca
pros-er-pin-a-cŏ-i′-dēs
Pros-o′-pis
Pros-tan-the′-ra
pro-stra′-tum
Pro′-tĕ-a
Pro-tĕ-a′-cĕ-æ
Pro-tein-oph-al′-lus
pro-tru′-sum
Proust′-ĭ-a
Prov-en-sa′-lĭ-a
pro-vin-cĭ-a′-lis
prox-im-a′-na
prŭ-i-na′-ta
prŭ-i-no′-sa
Pru′-it-i
Prum-nop′-it-ys*
Pru′-nĕ-æ
Pru-nel′-la
pru-nel-lŏ-i′-dēs
Pru′-ni
pru-nic-i′-da
pru-nif-ol′-ĭ-a

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

pru-nif-or′-mis
Pru-nop′-sis
pru′-nul-us
Pru′-nus
pru′-rĭ-ens
pru-rī′-ta
Psal-lĭ-o′-ta
Psam′-ma
Psam-mi′-sĭ-a
Pseud-ac-a′-cĭ-a
Pseud-æ′-gle
Pseud-al-ang′-ĭ-um
Pseud-ath-yr′-ĭ-um
pseud-ep-id-en′-drum
pseud′-ŏ-ar-me′-rĭ-a
Pseud′-ŏ-*bar-le′*-rĭ-a
Pseud′-ŏ-bom-by′-cēs
Pseud′-ŏ-cap′-sic-um
pseud′-ŏ-cer′-as-us
pseud′-ŏ-cyp-e′-rus
Pseud′-ŏ-cyt′-is-us
Pseud′-ŏ-drac-on′-tĭ-um
pseud′-ŏ-*ger′-va-o*
Pseud′-ŏ-lar′-ix
Pseud′-ŏ-pan′-ax
Pseud′-ŏ-plat′-an-us
Pseud′-ŏ-scor′-dum
pseud′-ŏ-su′-ber
Pseud′-ŏ-*tsu′-ga*
psi
Psid′-ĭ-um
Psi′-la*
Psi-lod-och′-ĕ-a
Psi-log′-yn-e
Psi-lon-e′-ma
Psi-los-an′-thus
psi-los-ep′-al-us
Psi-los-te′-mōn
Psi-los′-tom-a
Psi-lo′-tum
Psith-yr-is′-ma
psit-tac-i′-na
psit-tac-o′-rum
Pso-ral′-ĕ-a
Psy′-che*
Psy-chech-i′-lus
Psy-cho′-dēs
Psy-chot′-rĭ-a
Psy-chot′-roph-um
Psyd′-rax
Psyl′-la
Ptar′-mic-a
Ptel′-ĕ-a
ptel-ĕ-ŏ-i′-dēs
Ptel-id′-ĭ-um
pter-id-if-ol′-ĭ-a
Pter′-is
Pter′-ĭ-um
Pter-oc-ar′-pus*
Pter-oc-ar′-ў-a
Pter-oc-eph′-al-us
Pter-och-i′-lus
pter-oc′-lad-on
Pter-oc-oc′-cus
Pter-od-is′-cus
pter-ŏ-i′-dēs
Pter-ol-ob′-ĭ-um
Pter-o-lo′-ma
Pter-on-eu′-rum
pter-oph′-or-a
Pter-oph-or-i′-na
Pter-oph-yl′-lus
Pter-oph′-yt-on
Pter-op′-sis
Pter-os-per′-mum
Pter-os′-por-a
Pter-os-tel′-ma
Pter-os′-tyl-is
Pter-os′-tyr-ax
Pter-o′-ta
Pter-o-zo′-nĭ-um
Pter-yg-oc′-al-yx
Pter-yg-o′-dĭ-um
pter-yg-os-per′-ma
Ptil-oc-ne′-ma*
Ptil-om′-er-is
Ptil-os-teph′-ĭ-um
Ptil-ot′-rich-um
Ptych-och-i′-lus
Ptych-os-per′-ma
pu′-bens
pu′-ber-a
pu-ber′-ul-a
pu′-bēs
pu-bes′-cens
pu-big′-er-a
Puc-ci′-nĭ-a
Puc-ci′-nĭ-ĕ-i
pud-ib-un′-dus
pud′-ic-a
Pu-er-a′-ri-a
Pug-ĭ-o-nel′-la
pug-ĭ-o-nif-or′-mis
pul-chel′-lum
pul′-cher
pul-cher′-rim-a
pul′-chrum
Pu-le′-gĭ-um
pul′-la
Pul-mo-na′-rĭ-a
Pul-sat-il′-la
Pul-ten-æ′-a
pul-ver′-ĕ-us
pul-ver-ul-en′-tum
pul-vi-na′-ris
pul-vi-na′-tum
pul-vi′-num
pu′-mil-a
Pu-mil′-ĭ-o
punc-ta′-ta
punc-ta-tis′-sim-um
punc-til-la′-ta
punc-til-ob′-ul-a
punc-tul-a′-tus
pun′-gens
Pu′-nic-a
pu-nic′-ĕ-a
pu-nic-if-ol′-ĭ-a
Pu-pal′-ĭ-a
Pur-die-a′-na
Pur′-die-i
pu′-re-um
Pur′-ga
pur-pur-a′-cĕ-a
pur-pur-as′-cens
pur-pur-a′-tum
pur-pur′-ĕ-a
pur-pur-ĕ-if-lo′-rum
Pur-sæ′-tha
Pursh′-ĭ-a
Pursh-ĭ-a′-na
Pusch-kin′-ĭ-a
pusch-kin-ĭ-ŏ-i′-dēs
pus-il′-lus
pus-tu-la′-ta
Pu-to′-rĭ-a
Put-ter-lick′-ĭ-a
Put-zeys′-ĭ-a′-na
Puy′-a
Puydt′-ĭ-i
pyc-nac-an′-tha
pyc-nan′-tha
pyc-noc-eph′-al-us
Pyc-nod-o′-rĭ-a
Pyc-nop′ter-is
pyc-nop′-ter-um
pyc-nos-tach′-ў-a
Pyc-nos′-tach-ys
Py-gæ′-ra
pyg-mæ′-a
Pyl′-ĭ-um
Pyr-ac-an′-tha*
pyr-ac-an-thif-ol′-ĭ-a
Pyr-al-id′-in-a
Pyr′-al-is
Py-ram′-i
py-ram-id′-al-is
py-ram-id-a′-ta
pyr-a′-rĭ-a
Pyr-as′-ter
Py-re′-na*
pyr-en-æ′-us
pyr-en-a′-ic-a
Py-re-nom-yc-e′-tēs
Pyr-eth′-rum*
Pyr′-gus
Pyr′-i
pyr-ic′-ol-a
pyr-if-ol′-ĭ-a
pyr-if-or′-mis
pyr′-in-um
pyr-is′-ug-a
Pyr′-ol-a
pyr-ol-æ-fol′-ĭ-a
Pyr-ol-i′-rĭ-on
pyr-ol-ŏ-i′-dēs
Pyr-os-teg′-ĭ-a
pyr-roch′-rŏ-um
Pyr-rhei′-ma
Pyr-ul-a′-rĭ-a
Pyr′-us*
Py′-thĭ-on
Py′-thĭ-um
Py-tho′-nĭ-um
Pyx-id-an-the′-ra

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter: ŭ as in pow′-er-f*ŭl*: ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

pyx-id-a′-ta
pyx-id-if′-er-um
pyx-id-oph′-or-um

quad-ran-gul-a′-ris
quad-ran-gul-a′-ta
quad-ra′-ta
Qua′-drĭ-a
quad-rĭ-au-ri′-ta
quad-ric′-ol-ŏr
quad-ric-or′-nis
quad-rid-en-ta′-ta
quad-rif′-id-us
quad-rif-ol′-ĭ-a
quad-rip-ar-ti′-ta
quad-riv-al′-vis
Qua′-lĕ-a
Qua′-moc-lit
Qua′-qua
Quar-tin′-ĭ-a
Quar-tin-ĭ-a′-nus
Quas′-si-a
Quek-et′-tĭ-a
Quel′-tĭ-a
quer-ce-tic′-ol-a
quer-cif-ol′-ĭ-a
quer-ci′-num
Quer′-cit-ron
Quer′-cus
Ques-nel′-ĭ-a
Ques-nel-ĭ-a′-na
Qui-hou′-i
Quil-la′-ja
Quil-la′-jĕ-æ
qui-na′-ta
quin′-quĕ-col-or
quin-quĕ-flo′-ra
quin-quĕ-fol′-ĭ-um
quin-quĕ-loc-ul-a′-ris
quin-quĕ-mac-ul-a′-tus
quin-quĕ-ner′-vĭ-a
quin-quĕ-punc-ta′-tus
quin-quĕ-vul′-ner-a
Quin-til′-ĭ-a
Quis-qua′-lis
qui-ten′-sĕ
Qui-vi′-sĭ-a
quæ-si′-ta

rac-e-mif-lo′-ra
rac-e-mo′-sus
rac-e-mul-o′-sa
rach-irh-i′-zon*
Rad-di-a′-num
Rad-em-ach′-ĭ-a
ra′-dens
rad-ĭ-a′-ta
ra-di′-cans*
ra-di-cic′-ol-a
ra-di-cip-er′-da
ra-di′-cum
rad-ĭ-if-lo′-rus
Rad′-ĭ-ol-a*
rad-ĭ-o′-sa
Ra′-dul-a
Ræg′-ner-ĭ-a′-na
Raff-les-ĭ-a′-na
Ra-fi-nes′-qui-i
Raf′-nĭ-a
Rag-am-ows′-kĭ-i
rag-us-i′-na
Rail-lar′-dĭ-a
Rai′-ner-i
Ra′-jah
Ra-ja′-nĭ-a
Ram-bu′-rĭ-i
ra-men-ta′-cĕ-a
ra-mif-lo′-ra
Ra-mond′-ĭ-a
ra-mond-ĭ-ŏ-i′-dēs
ra-mo′-sa
ra-mo-sis′-sim-um
ra-mo-sŏ-i′-dēs
Ram-til′-la
Ra-mul-a′-rĭ-a
ra-mul-o′-sa
ra′-næ
Ra-na′-rĭ-a
Ran-ca′-gua
Ran-dal′-ĭ-a
Rand′-ĭ-a
ran-gif-er-i′-na
ra-nif′-er-um
Ra-nun-cul-a′-cĕ-æ
ra-nun-cul-if-lo′-ra
ra-nun-cul-ŏ-i′-dēs
Ra-nun′-cul-us*
Ra′-pa
rap-a′-cĕ-um
ra′-pæ
Rap-a′-nĕ-a
Rap-a′-tĕ-a
Rap-a-tĕ-a′-cĕ-æ
Raph′-an-i
Raph-an-is′-trum
Raph′-an-us
Raph′-ĭ-a
raph-id-ac-an′-tha*
Raph-id-oph′-or-a
Raph-id-oph-yl′-lum
Raph-ĭ-ol′-ep-is
Raph-is-tem′-ma
ra-pun-cul-ŏ-i′-dēs
Ra-pun′-cul-us
Ra-pun′-tĭ-um
ra-rif-lo′-ra
ra′-rum
Ras-pail′-ĭ-a
Ras-pal′-ĭ-a
*Rat-clif-f*ĭ-a′-na
Rath′-ĕ-a
Rath′-kĕ-a
Rat-ib′-id-a
Ra-to′-nĭ-a
rat′-tus
Ratz-eb-ur′-gi

rau′-cus
Rau-li′-nĭ-i
Rau-wolf′-ĭ-a
Rau-wolf′-ĭ-i
Rav-en-a′-la
Rav-en-e′-a
Rav-en′-ĭ-a
Rav-en′-næ
Rawes′-ĭ-i
Re-a′-li
Re-a′-na
Reau-mu′-rĭ-a
Reau-mu-rĭ-a′-cĕ-æ
Reb-ec′-ca
rec-ep-ta′-cul-o′-rum
Rech-stein-er′-a
rec-li-na′-ta
rec′-ta
rec-ur′-va
rec-ur-va′-ta
rec-ur-vif-ol′-ĭ-um
rec-ut-i′-ta
red-iv-i′-va
Red-out′-ĕ-a
Red-out′-ĕ-i
re-du-plic-a′-tum
Reed-ĭ-a′-num
Reeves′-i
Reeves′-ĭ-a
Reeves-ĭ-a′-na
ref-lex′-a
ref-rac′-tum
ref-ul′-gens
re-ga′-lis
Re-gel′-ĭ-a
Re-gel-ĭ-a′-num
Re-gel′-ĭ-i
reg-er′-min-ans
re′-gĭ-a
Re-gi′-na
Reg′-la
Reg-nel′-li
Reg-nel′-lĭ-i
Re-gni-e′-ri
Reh-man′-nĭ-a
Reich-ar′-di
Reich-ar′-dĭ-a
Reich-el′-ĭ-a
Reich-en-bach-ĭ-a′-na
Reich-en-bach′-ĭ-i
Reich-en-heim′-ĭ-i
Reid-el-ĭ-a′-na
Reid′-ĭ-a
Rein-eck′-e-a
Rein-eck′-ĭ-a
Rein-wardt′-ĭ-a
Rein-wardt′-ĭ-i
Rel-han′-ĭ-a
rel-ig-ĭ-o′-sum
rel-iq-ua′-na
Rem-ac′-lĕ-a
rem-o′-tum
Rem-u-sat′-ĭ-a
Re-nan-the′-ra
Ren′-da

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in slĕn′-der; ē as in v*ē′*-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*: au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Rend-at′-ler-i
Re-nealm′-ĭ-a
re-nif-or′-mis
Ren-sel-aer′-ĭ-a
rep-an′-dus
re′-pens
rep′-tans
Re-quien′-i
Re-quien′-ĭ-a
res-ec′-tum
Res-e′-da
Res-e-da′-cĕ-æ
re-si-na′-na
re-si-no′-sa
Res-tĭ-a′-cĕ-æ
Res′-tĭ-o
Res-trep′-ĭ-a
Re-ta′-ma
Re-ta-mil′-i-a
Re-ta-nil′-la
Ret-em-ey-er-a′-num
re-tic-ul-a′-ta
Re-tin-a′-rĭ-a
Re-tin′-ĭ-a
Re-ti-niph-yl′-lum
Re-ti-nos′-por-a
re-tor′-ta
re-tro-flex′-um
ret-u′-sa
Retz′-ĭ-a
Reu′-ter-i
rev-er′-sa
rev-ol-u′-tus
Rex
Rex′-ĭ-i
Rey-mon′-dĭ-i
Rhab-doc-rin′-um
Rhac-o′-ma
Rhad-in-oc-ar′-pus
Rha-go′-dĭ-a
Rham′-nĕ-æ
rham-nif-ol′-ĭ-a
rham-nŏ-i′-dēs
Rham′-nus
Rhaph-id-oph′-or-a*
Rhaph-ĭ-ol′-ep-is
Rhaph-ith-am′-nus
Rhap-id-oph-yl′-lum
Rhap′-is
Rha-pon′-tic-um
Rheed′-ĭ-a
Rheed′-ĭ-i
Rhe′-um
Rhex′-ĭ-a
Rhi-nac-an-tha′-cĕ-æ
Rhi-nac-an′-thus*
Rhi-nan-tha′-cĕ-æ
Rhi-nan′-thus
Rhi-nop-et′-al-um
Rhi-pid-od-en′-dron*
Rhi-pid-op′-ter-is
Rhi-pod-en′-dron
Rhi-pog′-on-um
Rhip′-sal-is
Rhi-zob-ĭ-i′-næ
Rhi-zob′-ĭ-us*
Rhi-zob-ol′-ĕ-æ
Rhi-zob′-ol-us
Rhi-zoc-ar′-pe-æ
Rhi-zog-lōs′-sum
Rhi-zom-or′-pha
Rhi-zoph′-or-a
Rhi-zoph-or′-ĕ-æ
rhi-zoph-yl′-lum
rhi-zoph′-yt-a
rhod-ac′-rum
Rhod-am′-nĭ-a
rhod-an-en′-sis
rhod-an′-tha
Rhod-an′-the
Rho-dĕ-a′-na
Rhod′-ĭ-ol-a
Rhod-i′-tēs
rhod-oc-en′-trum
rhod-och-i′-la
Rhod-och′-it-on
rhod-oc-inc′-ta
Rhod-oc-is′-tus
Rhod-oc′-om-a
Rhod-od-en′-dron*
Rhod-ol-ei′-a
Rhod-om-yr′-tus
rhod-on-eur′-um
rhod-op-en′-sis
rhod-oph-thal′-mus
rhod-op-leur′-on
rhod-op-ter-yg′-ĭ-um
Rhod-o′-ra
Rhod-orh-i′-za
Rhod-os′-path-a
Rhod-os′-tach-ys
Rhod-os′-tom-a
Rhod-oth-am′-nus
Rhod-ot′-yp-os
Rhœ′-as
Rho′-e-o
rho-if-lo′-ra
rhom′-bĕ-a
rhom-bif-ol′-ĭ-a
rhom-bŏ-i′-dal-is
rhom-bŏ-i′-dĕ-um
Rho′-pal-a
Rhop-al-oc′-er-a
Rhop-al-os′-iph-um
Rhop-al-os-tig′-ma
Rhop-al-os′-tyl-is
Rhu-ac-oph′-il-a
Rhūs
Rhyn-chad-e′-nĭ-a
Rhyn-chan-the′-ra
Rhyn-chi′-tēs
Rhyn-chog-lōs′-sum
Rhyn-chop-e′-ra
Rhyn-chop-et′-al-um
Rhyn-choph′-or-a
Rhyn-cho′-sĭ-a
Rhyn-chos-per′-mum
Rhyn-chos′-tyl-is
Rhyn-chot′-ech-um
Rhys-os-per′-mum
Rhyt-id-an′-dra*
Rhyt-id-oph-yl′-lum
Rhyt-ig-lōs′-sa
Rhyt-is′-ma
ri-bĕ-a′-na
Ri′-bēs
Ri-be′-sĭ-ĕ-æ
Ri-be′-sĭ-i
ri-bif-ol′-ĭ-a
Ri′-bis
Ric-car-dĭ-a′-nus
Ric-car-to′-ni
Ri-ce-a′-na
Rich-ard′-ĭ-a
Rich-ards′-i
Rich-ards-ĭ-a′-na
Rich-ards-o′-ni
Rich-ards-o′-nĭ-a
Rich′-ĕ-a
Rich′-ĕ-i
ric-in-if-ol′-ĭ-um
Ric′-in-us
Ri-co′-tĭ-a
Rid-olf-ĭ-a′-na
Rie′-del-ĭ-a′-num
Rig-id-el′-la
rig-id′-ul-um
rig′-id-um
Ri′-ma
rin′-gens
Rin′-go
Ri-oc-reux′-ĭ-a
ri-pa′-rĭ-um
Ri-pid′-ĭ-um
Rip-og′-on-um
Ritch-ie′-a
Ritch-ie-a′-na
Ri′-tro
Ri-um-in-ĭ-a′-na
ri-va′-le
Ri′-ve-a
Riv-i-e′-ra
Riv-i-e′-ri
Riv-i′-na
Riv-i-nĭ-a′-na
ri-vul-a′-ris
Ri-zo′-a
Ro-berg′-ĭ-a
Ro-ber-tĭ-a′-num
Rob-erts′-ĭ-a
Rob-ert′-ĭ-i
Rob-erts-o′-nĭ-a
Rob-in′-ĭ-a
rob-in-ĭ-æ-fol′-ĭ-um
Rob-in-so′-ni
Rob-in-so′-nĭ-a′-na
Rob-i-que′-tĭ-a
ro-bor-a′-ta
Ro′-bur
ro-bus′-tus
Roc-cel′-la
Ro′-chĕ-a
Ro-chĕ′-lĭ-a
Ro-che-lĭ-a′-na
Ro-chen′-sis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in **c**ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ro-dek-ĭ-a′-na
Rodg-ers′-ĭ-a
Rod-ĭ-æ′-i
Rod-i′-gas-i
Rod-i-gas-ĭ-a′-na
Rod-ri-gue′-zĭ-a
Ro-el′-la
Rœ-me′-rĭ-a
Rœ-me-rĭ-a′-na
Rœ′-per-a
Roes-le′-rĭ-a
Roes-te′-lĭ-a
Roez′-lĭ-a
Roez-lĭ-a′-na
Roez′-lĭ-i
Rof′-fĭ-a
Rog-ers′-ĭ-i
Ro-gi-e′-ra
Ro-gi-e′-ri
Ro-han′-ĭ-i
Roh′-dĕ-a
Rohr′-ĭ-a
Rohr′-ĭ-i
Ro-land′-ra
Rol-lis-o′-ni
Ro-ma′-na
Ro-man-zof′-fĭ-a
Ro-man-zov-ĭ-a′-na
Ro-man-zov′-ĭ-i
Ro-maz-of-fĭ-a′-na
Ro-me′-rĭ-a
Rom′-ney-a
Rom-ul-e′-a
Ron-del-e′-tĭ-a
Ronn-berg′-ĭ-a
Ron-now′-ĭ-a
Roop′-er-i
Rop′-al-a
Ros′-a*
ros-a′-cĕ-a
Ros-a′-cĕ-æ
Ros′-æ
ros-æ-flo′-ra
ros-æ-fol′-ĭ-us
ros-a′-na
Ro-san-ov′-ĭ-a
ros-a′-rĭ-a
Rosch-e′-rĭ-a
Ros-co′-e-a
Ros-co-e-a′-na
Ro′-sĕ-a
Ros′-ĕ-æ
Ros-eel′-sĭ-i
ros′-ĕ-us
ros-mar-i′-nif-ol′-ĭ-a
ros-mar-i-nif-or′-mis
Ros-mar-i′-nus
Ross′-ĭ-i
Ros-tel-la′-rĭ-a
ros-tel-la′-ta
ros-tra′-lis
ros′-trans
Ros-tra′-rĭ-a
ros-tra′-ta
ros-ul-a′-ris

Ro′-tang
rot-a′-tus
Roth-man′-nĭ-a
roth-om-ag-en′-sis
Roths-child′-ĭ-a-num
Rott-boel′-lĭ-a
Rott-le′-ra
rot-un-da′-tum
rot-un-dif-ol′-ĭ-a
rot-un′-dum
Rou-gi-e′-ri
Rou′-ham-on
Rou-li′-nĭ-a
Rou′-pal-a
Rou-pel′-lĭ-a
Rou′-re-a
Rous-sæ-a′-cĕ-æ
Rox-burgh′-ĭ-a
Rox-burgh-ĭ-a′-cĕ-æ
Rox-burgh′-ĭ-i
Roy-e′-na
Roy-e′-ni
Roy′-lĕ-a
Roy-lĕ-a′-nus
Roy′-lĕ-ĭ
Rub′-ĕ-æ
rub-el′-la
rub′-ens
rub′-er*
rub-er′-rim-a
rub-es′-cens
Rub′-i
Rub′-ĭ-a
Rub-ĭ-a′-cĕ-æ
rub-ĭ-æ-fol′-ĭ-a
rub-ic-un′-da
rub′-id-a
rub-ĭ-el′-la
rub-if-lo′-ra
ru-bi-gin-o′-sa
Ru-bi-gin-o′-sæ
ru-bi-go-ve′-ra
Rub′-i-I-dæ′-i
rub-ĭ-ŏ-i′-dēs
rub′-ra
rub-ric-au′-le
rub-rif-ol′-ĭ-a
rub-roc-inc′-tum
rub-ron-er′-vĭ-um
rub-ron-o-do′-sum
rub-ro′-rum
rub-rov-e′-nĭ-a
rub-rov-e-no′-sum
rub′-rum
Rub′-us*
Ruck′-er-i
Ruck-er-ĭ-a′-num
Ruck-er′-ĭ-i
Ruck′-ĭ-a
Rud-beck′-ĭ-a
Rud′-gĕ-a
rud′-is
Ru-dolph′-ĭ-a
Ru-dolph-æ-me′-rĭ-a
Ru-el′-lĭ-a

ru-el-lŏ-i′-dēs
ru′-fa
ru-fes′-cens
Ruf′-fĭ-a
ru-fic-ol′-lis
ru-fic-or′-nis
ru-fin-er′-vis
ru-fin′-ul-a
ru-foo-inc′-tus
ru′-ful-um
ru′-ga
ru-gil′-ob-us
ru-go′-sa
Ru-i′-zĭ-a
Ru-i-zĭ-a′-na
Ru′-lĕ-a
Ru′-lĕ-i
Ru-ling′-ĭ-a
Rum′-ex
Rum′-ic-is
Rum-phĭ-a′-na
Rum′-phĭ-i
run-ci-na′-tum
Ru-pal-ley′-a
ru-pes′-tre
ru-pic-ap-ra′-rĭ-a
ru-pic′-ol-a
Rup′-pĭ-a
Rup′-pĭ-i
Ru-prech′-tĭ-i
rus-cif-ol′-ĭ-a
Rus′-cus
Ru-si′-na
Rus-sel′-i-a
Rus-sel-lĭ-a′-na
Rus′-si
Rus′-su-la
rus′-tic-um
Ru′-ta
Ru-ta′-cĕ-æ
ru-tæ-fol′-ĭ-us
Ru′-ta-mu-ra′-rĭ-a
ruth-e′-nic-um
rut-id-ob-ul′-bon
rut′-il-ans
Ruysch′-ĭ-a
Ruysch-ĭ-a′-num
Ry-an′-ĭ-a
Ry-man′-dra
Rys-sop′-ter-ys
Ryt-id-ol-o′-ma
ryt-id-oph-yl′-la
Ryt-ig-in′-ĭ-a

Sab-ad-il′-la
Sa′-bal
Sab-ba′-tĭ-a
Sa′-bi-a
Sa-bi-a′-cĕ-æ
Sab-ic-e′-a
Sab-i′-na
Sab-i′-næ
Sab-i′-ne-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Sab-i′-ni
Sab-i-nĭ-a′-nus
Sab-i′-nĭ-i
sab-i′-nŏ-i′-dēs
sac-ca′-ta
sac-char-a′-ta
sac-char-if′-er-a
sac-char′-in-um
Sac-char-om′-yc-ēs
Sac-char′-um
sac-cif′-er-a
Sac-coch-i′-lus
Sac-co-ĭ-a′-na
Sac-col-ab′-ĭ-um
Sac-col-o′-ma
sach-al-i-nen′-sĕ
Sac-og-lōt′-tis
Sad-ler′-ĭ-a
Sag-e′-nĭ-a
Sag-er-e′-tĭ-a
Sag-i′-na
sag-it-tæ-fol′-ĭ-a
sag-it-ta′-lis
Sag-it-ta′-rĭ-a
sag-it-ta′-ta
sag-it-tif-ol′-ĭ-a
Sag-li-o′-nis
Sa-go′-ne-a
Sa-græ′-a
Sa-gue′-rus
Sa′-gus
Sa-lac′-ca
sal-ac-cen′-sis
Sal-a′-cĭ-a
Sal-dan′-ha
Sal-ic-a′-rĭ-a
sal-ic-a′-rĭ-æ-fol′-ĭ-a
sal-ic-if-ol′-ĭ-a
sal-ic′-in-a
Sal-ic-in′-ĕ-æ
sal′-ic-is
Sal-ic-or′-nĭ-a
sal-ic-or-nŏ-i′-dēs
sal-ig′-na
Sa-lis-bu′-rĭ-a
Sa-lis′-ĭ-a
Sal′-ix
Sal′-mĕ-a
Sal′-mĭ-a
Sal′-mĭ-a′-na
Sal′-mĭ-i
Sal-pich-læ′-na
Sal-pich′-rŏ-a
Sal-pich-ro′-ma
Sal-pig-lōs′-sis
Sal-ping-an′-tha
Sal-pix-an′-tha
sal-sil′-la
Sal′-sol-a
Sal-sol-a′-cĕ-æ
sal-sol-ŏ-i′-dēs
sal-su-gin-o′-sus
sal′-sul-a
sal-ta-bun′-dum
sal-ta-to′-rĭ-a
sal-ta-to′-rum
Sal′-tic-us
Sal-va-do′-ra
Sal-va-do-ra′-cĕ-æ
Sal′-vĭ-a
Sal′-vĭ-æ
sal′-vĭ-æ-fol′-ĭ-us
sal-vif-ol′-ĭ-a
Sal-vi′-ni-a
Sal-vi′-ni-ĕ-æ
Salz-man′-ni
Sam′-ar-a
Sam′-bac
sam-bu-cif-ol′-ĭ-us
sam-bu′-cin-a
Sam-bu′-cus
Sam′-ĭ-a
Sa′-mol-us
Sa′-myd-a
Sa-myd-a′-cĕ-æ
San-che′-zĭ-a
San-co′-na
sanc′-ta
Sanc′-tæ Cath-er-i′-næ
San-dank′-wa
San-der-ĭ-a′-num
San-ders′-ĭ-i
San-der-so′-ni
San-der-so′-nĭ-a
Sand-ford′-ĭ-i
San-do′-ric-um
sand-vic-en′-sĕ
sand-wic-en′-sĕ
San-guin-a′-rĭ-a
san-guin′-ĕ-um
san-guin-ol-en′-tus
San-guis-or′-ba
San-guis-or-ba′-cĕ-æ
San-hil-a′-rĭ-a
San-sev-i-el′-la
San-sev-i-e′-ra
San-tal-a′-cĕ-æ
San′-tal-um
San-tol-i′-na
san-tol-i-nŏ-i′-dēs
San-vi-ta′-lĭ-a
Sap′-an
Sa-per′-da
sap′-id-a
sap-ĭ-en′-tum
Sap-in-da′-cĕ-æ
Sap-in′-dĕ-æ
Sap-in′-dus
Sap′-ĭ-um
sap-o-na′-cĕ-um
Sap-o-na′-rĭ-a
Sap-osch-ni′-kow-i
Sap-o′-ta
Sap-o-ta′-cĕ-æ
Sap′-pan
sapph-i′-rin-a
Sap-rol-eg′-nĭ-a
Sar-a′-ca
Sa-ra′-cha
Sar-can′-thus
Sar-cin′-ul-a
Sar-cin′-ul-æ
Sar-coc-ap′-nos
Sar-coc-ar′-pon
Sar-coc-an′-lon
Sar-coc-eph′-al-us
Sar-coch-i′-lus
Sar-coc-oc′-ca
Sar-coc-ol′-la
sar-co′-dēs
Sar-cog-lōt′-tis
Sar-cog′-on-um
Sar-col′-ob-us
Sar-coph-yl′-lus
Sar-cop-od′-ĭ-um
Sar-cop′-tēs
Sar-cos-tem′-ma
Sar-i′-bus
sar-mat′-ic-a
sar-men-ta′-cĕ-a
sar-men-to′-sum
Sar-mi-en′-ta
sar-nĭ-en′-sis
Sar-o′-tēs
Sar-o′-thra
Sar-rac-e′-nĭ-a
Sar-rac-e-nĭ-a′-cĕ-æ
Sar-sap-ar-il′-la
Sar-to′-rĭ-i
Sas-an′-qua
Sas′-saf-ras
sat-i′-va
Sat-ur-e′-ĭ-a
sat-ur-e′-ĭ-ŏ-i′-dēs
Sa-tur′-nĭ-a
Sat-yr′-ĭ-um
Sat-zu′-mi
Saun-ders′-ĭ-a
Saun-ders-ĭ-a′-na
Saun-ders′-ĭ-i
Sau-rau′-ja
sau-roc-eph′-al-a
Sau-rog-lōs′-sum
Sau-rom′-at-um
Sau′-rop-ūs
Sau-ru′-rĕ-æ
Sau-ru′-rus
Saus-su′-rĕ-a
Saus-su′-rĭ-a
Sau′-ter-i
Sau-va-ge′-sĭ-a
Sau-va-ge′-sĭ-ĕ-æ
Sav-as-ta′-na
Sav-il-ĕ-a′-na
sax-a′-til-is
Saxe-goth′-ĕ-a
sax-ic′-ol-a
Sax-if′-rag-a*
Sax-if-rag′-ĕ-æ
Sax-of-rid-er-i′-cĭ-a
sca′-ber
scab-er′-ul-a
scab′-ĭ-ei
scab′-ĭ-ēs
Scab-ĭ-o′-sa

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in pain; au as *ou* in house; g, c, and ch, always hard, as, for example, g in *g*ood, c in *c*uscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

scab-ĭ-o-sæ-fol′-ĭ-a
scab-ĭ-o-sŏ-i′-dēs
scab′-ra
scab-rel′-la
scab′-rid-a
scab-rif-ol′-ĭ-a
scab-ril-in′-gue
scab-ris-ca′-pa
scab-rĭ-us′-cul-a
Scæ′-vol-a
sca-la′-ris
Scal′-ĭ-a
Scam-mo′-nĭ-a
scan′-dens
scan′-dic-a
scaph′-a*
scaph-ig′-er-a
Scaph-yg-lōt′-tis
sca-po′-sus
scar-ĭ-o′-sum
scar-lat-i′-nus
Scel-och-i′-lus
Scep-a′-cĕ-æ
Scep-as′-ma
Scēp-tran′-thus
scēp′-trum
Schacht′-ĭ-i
Schæf-fer′-ĭ-a
Schaff-ner′-ĭ-a
Schaf′-ta
Schau-er′-ĭ-a
Schau-er-ĭ-a′-na
Sched-on′-or-us
Schee′-lĕ-a
Schee′-rĭ-a
Schee′-rĭ-i
Schef′-fer-i
Schel-ham′-mer-a
Schel-lol′-ep-is
Schel-ve′-rĭ-a
Scher-em-e′-tiew-i
Scher-zer-ĭ-a′-num
Scheuch-ze′-ri
Scheuch-ze′-rĭ-a
schid-ig′-er-a
Schid-os-per′-mum
Schie-dĕ-a′-num
Schie′-dĕ-i
Schil-ler-ĭ-a′-num
Schi′-ma
Schim-pe′-ri
Schi′-nus
Schis-mat-og-lōt′-tis
Schis′-mus
Schi-ver-eck′-ĭ-a
Schiz-æ′-a
Schiz-an′-dra
Schiz-an′-drĕ-æ
schiz-anth′-a
Schiz-anth′-ēs
Schiz-anth′-us
Schiz-ob′-as-is
Schiz-oc-æ′-na
Schiz-oc-ap′-sa
Schiz-oc-en′-tron
Schiz-o′-dĭ-um
schiz′-od-on
Schiz-ol-ob′-ĭ-um
Schiz-ol-o′-ma
Schiz-om-er′-ĭ-a
Schiz-om-yc-et′-ēs
Schiz-on-eu′-ra
Schiz-op-et′-al-on
schiz-op-et′-al-um
Schiz-oph-rag′-ma
schiz-oph-yl′-la
Schiz-op-leu′-ra
Schiz-op′-ter-is
Schiz-os-tem′-ma
Schiz-os′-tyl-is
Schkuhr′-ĭ-a
Schkuhr′-ĭ-i
Schleich′-er-i
Schleid-en-ĭ-a′-na
Schliep-er-ĭ-a′-num
Schlim′-ĭ-i
Schlim′-mĭ-a
Schlum-ber-ger′-ĭ-a
Schlum-ber-ger-ĭ-a′-na
Schmid-el′-ĭ-a
Schmidt-ĭ-a′-na
Schmidt′-ĭ-i
Schmitz′-ĭ-i
Schnitt-spahn′-i
Schoel′-ler-i
Schœn-an′-thus
Schœn′-ĭ-a
Schœn-op′-ras-um*
Schœn-or′-chis
Schœn′-us
Schœp′-fĭ-a
Scho-field′-ĭ-i
schol-a′-ris
Schol′-ler-a
Schol′-lĭ-a
Schom-burgh′-ĭ-i
Schom-burgk′-ĭ-a
Schom-burgk-ĭ-a′-nus
Schom-burgk′-ĭ-i
Scho′-tĭ-a
Schot-tĭ-a′-na
Schot′-tĭ-i
Schous-bœ′-a
Schouw′-ĭ-a
Schra′-der-a
Schranck′-ĭ-a
Schrank′-ĭ-i
Schre′-ber-a
Schrenk′-i
Schrenk-ĭ-a′-na
Schrö′-der-æ
Schrö-der-ĭ-a′-na
Schræ′-der-i
Schræ-der-ĭ-a′-num
Schu-ber′-tĭ-a
Schul-te′-sĭ-a
Schultz′-ĭ-i
Schwæ-gri-che′-nĭ-a
Schwan′-nĭ-a
Schwartz′-ĭ-a
Schwed′-ler-i
Schweig-ger′-ĭ-a
Schwenk-feld′-a
Schwenk′-ĭ-a
Schwerd′-ler-i
Schweyck-ert′-a
Scĭ-ad-oc′-al-yx*
Scĭ-ad-oph-yl′-lum
Sci-ad-op′-it-ys
Scĭ-aph′-il-a
Scil′-la
scil-la′-ris
scil-lŏ-i′-dēs
Scin-dap′-sus
scin-til′-lans
Scĭ-od-aph-yl′-lum
Scĭ-oph-yl′-la
Scir′-pĕ-æ
Scir′-pus
Sci-ta-min′-ĕ-æ
Scĭ-u′-ris
Scla′-rĕ-a
Scle-ran′-thus*
Scle′-rĭ-a
scle-roc-ar′-pa
Scle-ron-e′-ma
scle-roph-yl′-la
Scle-rop′-ter-is
Scle-roth-am′-nus
Scle-ro-tin′-ĭ-a
scle-ro-tĭ-o′-rum
scle-ro′-tĭ-um
Scle-rox′-yl-on
Scol-ĭ-os-o′-rus
Sco-loch′-lŏ-a
Scol-op-en′-dra
scol-op-en-drif-ol′-ĭ-um
scol-op-en-dri′-na
Scol-op-en′-drĭ-um
Scol′-ym-us
Sco-lyt′-id-æ
Sco′-lyt-us
Sco′-pa
sco′-pæ
Sco-pa′-rĭ-a
Scop-o′-lĭ-a
Scop-o-li′-na
scop-ul-i′-na
Scor′-dĭ-um
Sco′-rĭ-as
Scor-od-o′-nĭ-a
Scor-od-op′-ras-um
scor-pĭ-ŏ-i′-dēs
Scor-pĭ-u′-rus
Scor-zon-e′-ra
scor-zon-e-ræ-fol′-ĭ-a
scor-zon-e-rif-ol′-ĭ-um
sco′-tic-a
Scot′-tĕ-a
Scot-tĭ-a′-na
Scou′-ler-i
Scroph-ul-a′-rĭ-a
scroph-ul-a-rĭ-æ-fol′-ĭ-us
Scroph-ul-ar-in′-ĕ-æ
sculp′-tum

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

scur′-ra
Scu-tel-la′-rĭ-a
scu-tel-la-rĭ-ŏ-i′-dēs
scu-tel-la′-ris
scu-tel-la′-ta
Scu-tic-a′-rĭ-a
scu-tif-ol′-ĭ-a
Scut′-ul-a
scu′-tum
Scyph-an′-thus
Scyph-ul-a′-rĭ-a
Scyt-al′-ĭ-a
Scyt′-al-is
Scy-tan′-thus
Sea-forth′-ĭ-a
Se-bæ′-a
Se-ba′-na
Se-bes-te′-na
se-bif′-er-a
Sec-a′-le*
Se′-cal-is
Sec-am-o′-ne
se-chel-la′-rum
Se′-chĭ-um
sec-un′-da
sec-un-dif-lo′-rum
Sec-u-ri-da′-ca
sec-u′-rig-er
Sec-u-rig′-er-a
Sec-u-rin′-eg-a
Sed-e′-ni
Sed-e-nĭ-a′-na
Sed′-um*
See-man′-ni
See-man′-nĭ-a
See-man′-nĭ-a′-nus
Seg′-eth-i
seg-et′-um
Seg-ui-e′-rĭ-i
Seg-ui′-ne
Sel-ag-in′-ĕ-æ
Sel-a-gin-el′-la
Sel-a-gin-el′-lĕ-æ
sel-a-gin-ŏ-i′-dēs
Sel-a′-go
Sel-an′-drĭ-a
Sel-a′-tĭ-um
Sel-born-en′-sis
Sel-e′-nĭ-a
Sel-e-nip-ed′-ĭ-um
Sel-i′-num
Sel-kirk′-ĭ-i
sel-lig′-er-um
Sel-li′-guĕ-a
Sel-lo′-a
Sel-lo′-um
Sel-lo-vĭ-a′-na
Sel-lo-wĭ-a′-num
Sel-o′-sĭ-i
Sel-sky-a′-num
Se-man′-ĭ-i
Se-me-car′-pus
Se-mei-an′-dra
Sem′-el-e
Se-men-o′-vĭ-i
Sem-en-ow′-ĭ-i
se-mĭ-a-la′-ta*
se-mic-lau′-sa
se-mic-or-da′-tum
se-mic-yl-in′-dric-a
se-mid-ec-an′-drum
se-mig-al-ĕ-a′-tum
se-mil-ac′-er-um
se-mip-in-na′-ta
se-mis-er-ra′-ta
sem-per-flo′-rens
sem-per-vir′-ens
sem-per-vi-vŏ-i′-dēs
Sem-per-vi′-vum
Se-na′-cĭ-a
sen-ec-ĭ-if-ol′-ĭ-a
Sen-ec-il′-lis
Sen-ec′-ĭ-o*
sen-ec-ĭ-ŏ-i′-dēs
Sen-ec-ĭ-o′-nis
Sen′-eg-a
Sen′-eg-al
sen-eg-al-en′-sis
sen-i′-le
sen-sib′-il-is
sen-sit-i′-va
se-pĭ-a′-rĭ-a
se-pin′-col-a
se′-pĭ-um
sep-tang-ul-a′-re
Sep′-tas
sep-tem′-fid-a
sep-tem′-lob-um
sep-tem-punc-ta′-ta
sep-ten-tri-o-na′-le
Sep-to′-rĭ-a
sep-ul′-tum
Seq-uoi′-a
Ser-an-gi′-um
Se-raph′-yt-a
Ser-ap′-ĭ-as
serb′-ic-a
Ser-e-no′-a
Ser-ĭ-a′-na
se-ric′-ĕ-a
Se-ric-oc-ar′-pus
Se-ric-og′-raph-is
Ser-ing′-ĭ-a
Ser-i′-phĭ-um
Ser-is′-sa
Ser-ja′-nĭ-a
ser-jan′-ĭ-æ-fol′-ĭ-a
Ser′-lĭ-i
se-ro′-tin-us
ser′-pens
Ser-pen-ta′-rĭ-a
ser-pen-ti′-nus
Ser-pic′-ul-a
ser-pyl-lif-ol′-ĭ-um
Ser-pyl-lop′-sis
Ser-pyl′-lum
ser′-ra
ser-ra′-ta
ser-ra-tif-ol′-ĭ-a
Ser-ra′-tul-a
ser-rul-a′-ta
Ser-ru′-rĭ-a
Ser-ru′-rĭ-æ
Ser-sal-i′-sĭ-a
Ser-tif′-er-a
se-sam-ŏ-i′-dēs
Se′-sam-um
Ses-ban′-ĭ-a
Ses′-el-i
Se′-sĭ-a
Ses-le′-rĭ-a
ses-quip-ed-a′-lis
ses-sif-ol′-ĭ-um
ses-sil-if-lo′-ra
ses-sil-if-ol′-ĭ-us
ses′-sil-is
Ses-u′-vĭ-um
se-ta′-cĕ-a*
Se-ta′-rĭ-a
Seth′-i-a
se-tif-ol′-ĭ-um
se-tig′-er-a
se-to′-sa
se-tul-if′-er-um
se-tul-o′-sum
sev-e′-ra
Sev-er-i′-nĭ-a
Sew-er-zow′-i
Sew-er-zow′-ĭ-a
Sey-me′-rĭ-a
Sey-mour′-ĭ-a
Shal′-lon
Shan-non-ĭ-a′-na
Shaw′-ĭ-i
Shay-lock′-ĭ-i
Shep-herd′-i
Shep-herd′-ĭ-a
Shep-herd′-ĭ-i
Shep′-pard-i
Sher-rat-tĭ-a′-na
Short′-ĭ-i
Shu-ter-ei′-a
Shuttle-worth′-ĭ-i
si-am-en′-sis
Sib-bald′-ĭ-a
Sib-bald-ĭ-æ-fol′-i-a
Sib-i-ræ′-a
sib-i′-ric-a
Sib-thorp′-ĭ-a
Sib-thorp′-ĭ-i
Sic-el′-ĭ-um
sic′-ul-a
Sic-ŭ-oc-ar′-pus
sic-ŭ-ŏ-i′-dēs
Sic′-ŭ-os
Si′-da
Si-dal′-cĕ-a
Sid-e-ri′-tis*
Sid-e-rod-en′-dron
sid-e-rox-yl-ŏ-i′-dēs
Sid-e-rox′-yl-on
si-dŏ-i′-dēs
Sie′-ber-a
Sie′-ber-i
Sie-ber′-ĭ-a

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Sie-bold′-i
Sie-bold-ĭ-a′-na
Sie-bold′-ĭ-i
Sie-ges-beck′-ĭ-a
Sie-vers′-ĭ-a
Sie-vers′-ĭ-i
Sig-il-la′-rĭ-a
Sig-mat-os′-tal-yx
sig-na′-ta
sik-kim-en′-sis
si-la′-if-ol′-ĭ-a
Si-la′-us
Si-le′-ne
si-le′-nŏ-i′-dēs
Si-le-nop′-sis
Sil-ic-ul-o′-sa
Sil′-ĭ-qua
Sil-ĭ-quas′-trum
Sil-ĭ-quo′-sa
Sil′-pha
Sil′-phĭ-um
sil-va′-tic-a
Sil′-yb-um
Sim-a′-ba
Sim-ar-ou′-ba
Sim-ar-u′-ba
Sim-ar-u′-bĕ-æ
Sim-e′-this
Sim-monds′-ĭ-a
Si-mo′-nĭ-i
Sim-ons′-ĭ-i
sim′-plex
sim-plic-ic-au′-lis
sim-plic-if-ol′-ĭ-a
Sim-plic-if-ol′-ĭ-æ
sim-plic′-if-rons
sim-plic-is′-sim-um
Simp′-son-i
Sims′-ĭ-i
sim′-ul-a
sim′-ul-ans
Sin-a′-pis
Sin-clair′-ĭ-a
sin-em-a-ri-en′-sis
sin-en′-sis
sing-ap-o-ren′-sis
sin′-ic-um
Sin-ning′-ĭ-a
sin-u-a′-ta
sin-u-o′-sum
Siph′-o*
Siph-oc-am′-pyl-os*
Siph-on-an′-dra
Siph-on-an′-tha
Siph-o′-nĭ-a
Siph-o-nĭ-op′-sis
Siph-o-noph′-or-a
sip-yl-e′-um
Si′-rex
Si′-ri-um
Sir-ot′-sik
Sis′-ar-um
Sis′-soo
sis-ym-brĭ-if-ol′-ĭ-um
Sis-ym′-brĭ-um
Sis-yr-in′-chĭ-um
sit-chen′-sis
Si-toc-o′-dĭ-um*
Si-to′-dĭ-um
Si-tol-ob′-ĭ-um
Si-to′-na
Si′-um
Skim′-mi-a
Skin′-ner-i
Skin-ner′-ĭ-a
Skĭ-oph′-il-a
Sla-ter′-ĭ-a
Sloa′-ne-a
smar-ag′-din-a
Smeath-man′-nĭ-a
Smee-a′-na
Smēg-mad-er′-mos
Sme-rin′-thus
Smi-la′-cĕ-æ
smi-lac-if-ol′-ĭ-a
Smi-lac′-in-a
Smi′-lax
Smith′-ĭ-a
Smith-ĭ-a′-na
Smith′-ĭ-i
Smyr′-nĭ-um
sob-ol-if′-er-a
Sob-ral′-ĭ-a
soc-ĭ-a′-lis
soc-ot-ra′-na
So-crat-e′-a
So-di′-ro-i
So′-ja
So-la-na′-cĕ-æ
Sol-an′-der-i
So-lan′-dra
So-lan′-dri
*so-lan-d*rif-lo′-rum
so-la-nŏ-i′-dēs
So-la′-num
so-la′-re
Sol-a′-rĭ-a
Sol-dan-el′-la
sol-dan-el′-læ-flo′-ra
So′-lĕ-a
So-le′-na*
So-le-nach′-ne
So-le-nan′-dra
So-le-nan′-tha
So-le-nan′-thus
So-le-nid′-ĭ-um
So-le-nom′-el-us
So-le-noph′-or-a
So-le-nop′-sis
sol′-id-a
sol-id-a-gin′-ĕ-us
Sol-id-a′-go
so-lit-a′-rĭ-a
Sol′-ly-a
Som-mer-feldt′-ĭ-a
som-nic-ul-en′-tum
som-nif′-er-um
sonch-if-ol′-ĭ-a
sonch-ŏ-i′-dēs
Sonch′-us
Son-er-i′-la
Son-ner-a′-tĭ-a
son-o′-ra
Soph′-ĭ-a*
Soph′-or-a
soph-or-æ-fol′-ĭ-a
soph-or-ŏ-i′-dēs
Soph-ron-an′-the
Soph-ron-i′-tis
Sop-u′-bi-a
So-ran′-the
Sor-ba′-rĭ-a
sor-bif-ol′-ĭ-um
Sor′-bus
sor′-did-a
So-re′-ma
Sor′-ghum
Sor-in-dei′-a
So-roc-eph′-al-us*
So-rom′-an-ēs
sor-o′-rĭ-um
so-ros-por-ĭ-ŏ-i′-dēs
So-ros-por′-ĭ-um
Sou-a′-ri
Sou-lan-ge-a′-na
Sou-lan′-gĭ-a
Sou-rou-be′-a
South-well′-ĭ-a
Sou′-za
Sow-er-bæ′-a
Sow-er′-bĭ-i
spa-di′-cĕ-um
Spa-dos′-tyl-ēs
Spar-ax′-is
Spar-gan′-ĭ-um
Spar-man′-nĭ-a
spar′-sa
spar-sif-lo′-ra
spar-sif-ol′-ĭ-a
spar′-tĕ-a
Spar-tĭ-an′-thus
Spar-ti′-na
spar-tĭ-ŏ-i′-dēs
Spar′-tĭ-um
Spar-toth-am′-nus
Spar′-tum
Spat-al-an′-thus
Spat-al′-la
Spat-an′-thus
spath-a′-cĕ-a*
Spath-an′-thĕ-um
Spath-eg-as′-tĕr
Spath-e′-lĭ-a
Spath-ic-ar′-pa
Spath-iph-yl′-lum
Spath′-ĭ-um
Spath-o′-dĕ-a
Spath-og-lŏt′-tis
Spath-*ot-ec-o′-ma*
spath-ul-a′-tum
spath-ul-if-ol′-ĭ-um
spath-ul-i′-num
Spath-y-e′-ma
Spat-ul-a′-rĭ-a
spec-ĭ-o′-sa

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in ăp-art′; ā as in psā′-lmist; ĕ as in slĕn′-der; ē as in vē′-ined; ĭ as in thĭn; ī as in mach-ī′-nist; ŏ as in rŏt′-ten; ō as in vō′-ter; ŭ as in pow′-er-fŭl; ū as in rū′-ler: ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *p*ain; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

spec-ĭ-o-sis′-sim-a
Speck-li′-nĭ-a
spec-ta′-bil-is
spec-tan′-dum
spec-tril-in′-guis
spec′-trum
Spec-ul-a′-rĭ-a
spec-ul-a′-trix
Spec′-ul-um
Speir-an′-tha
Spel′-ta
spe-lun′-cæ
Spen-cer-ĭ-a′-na
Sper′-gul-a
Sper-gul-as′-trum
Sper-ling′-ĭ-a
Sper-mac-o′-ce*
Sper-mad-ic′-ty-on
Sper-max′-yr-um
sphac-el-a′-tum
Sphac′-el-e
Sphac-el′-ĭ-a
Sphær-al′-cĕ-a
Sphær-el′-la
Sphær′-ĭ-a
Sphær-ĭ-a′-cĕ-æ
sphær′-ic-a
Sphær-oc-ar′-pus
Sphær-oc-ar′-ŷ-a
sphær-oc-eph′-al-us
Sphær-och′-lŏ-a
Sphær-oc-ĭ-on′-ĭ-um
Sphær-og′-yn-e
sphær-ŏ-i′-dĕ-a
Sphær-ol-ob′-ĭ-um
Sphær-o′-ma
Sphær-oph′-or-a
Sphær-oph-y′-sa
Sphær-op-sid′-ĕ-æ
Sphær-op′-sis
Sphær-op′-ter-is
sphær-os-tach′-ŷ-um
Sphær-os-te′-ma
Sphær-os-teph′-an-os
Sphær-os-tig′-ma
Sphær-oth-e′-ca
Sphær-oth-e′-le*
Sphag-na′-cĕ-æ
Sphag′-num
Sphe-nan′-dra*
Sphe-nod-es′-ma
Sphe-nog′-yn-e
Sphe-not′-om-a
Sphing′-id-æ
Sphing-i′-na
Sphinx
sphon-dyl′-ĭ-um
spi′-ca
Spi′-cant
spi-ca′-ta
Spi-cer-ĭ-a′-num
spi-cig′-er-a
Spi-cil-la′-rĭ-a
Spiel-man′-nĭ-a
Spi-gel′-ĭ-a
Spi-lan′-thēs*
Spi-lan′-thus
Spi-loc-æ′-a
Spi-lon-o′-ta
spi-lop′-ter-um
Spi-los-o′-ma
spi′-na-Chris′-ti
Spi-na′-cĭ-a
spi-na′-rum
Spi′-nif-ex
spi-no′-sa
spi-no-sis′-sim-us
spi-nul-if′-er-a
spi-nul-o′-sum
Spi-ræ′-a*
Spi-ræ′-ĕ-æ
spi-ra′-lis
Spi-ran-the′-ra
Spi-ran′-thēs
spi-ran-thŏ-i′-dēs
Spi-ra′-rĭ-a
spi-rel′-la
Spi-rid′-ĭ-um
Spi-roc-o′-nus
Spi-ron-e′-ma
Spi-ros-te′-mŏn
Spith-am-æ′-us
Spix-ĭ-a′-na
splach-nic-ar′-pa
splen′-dens
splen′-did-a
splen-did-is′-sim-um
Spof-forth-ĭ-a′-na
Spon′-dĭ-as
spond-ĭ-ŏ-i′-dēs
Spon-dyl-oc-oc′-ca
Spon-ti′-ni
spor-ad-oc-ar′-pum*
Spor-id-es′-mĭ-um
Spor-ob′-ol-us
Spra′-gue-a
Sprek-el′-ĭ-a
Spreng-el′-ĭ-a
Spreng-el′-ĭ-i
spreng-el-ĭ-ŏ-i′-dēs
Spring′-ĭ-a
Spru-cĕ-a′-num
Sprŭ′-cĕ-i
spu-ma′-rĭ-a
spur′-ĭ-a
spu-ta′-tor
Spyr-id′-ĭ-um
squa′-lens
squa′-lid-a
squa-ma′-ta
Squa-mat-ax′-us
squa′-mĕ-a
squa-mif′-er-a
squa-mo′-sa
squa-mul-o′-sum
squar-ro′-sa
Squil′-la
Staav′-ĭ-a
Stach-ŷ-op-o′-gōn*
Stach′-ys
Stach-yt-ar′-pha
Stach-yt-ar-phe′-ta
Stach-ŷ-u′-rus
Stack-hous′-ĭ-a
Stack-hous′-ĭ-ĕ-æ
Stæh-el-i′-na
Stag-on-os′-por-a
Stal-ag-mi′-tēs
Stam-ford-ĭ-a′-num
sta-min′-ĕ-a
Stand-ish′-ĭ-i
Stang-ĕ-a′-na
Stang-er′-ĭ-a
Stan-ho′-pĕ-a
Stan-ho′-pĕ-as′-trum
*Stan′-ley-a**
Stan-ley-a′-na
Stan′-nĭ-a
stans
Stans-field′-ĭ-i
Sta-pel′-ĭ-a
Sta-pel′-ĭ-æ
sta-pel-ĭ-æ-for′-mis
sta-pel-ĭ-ŏ-i′-dēs
Staph-id-ĭ-as′-trum
Staph-id′-ĭ-um
Staph-yl-e′-a*
Staph-yl-e′-æ
staph-yl-e-ŏ-i′-dēs
Staph-yl-i′-nid-æ
Staph-yl-i′-nus
Staph-ys-ag′-rĭ-a
Star′-kĕ-a
Stat′-ic-e
stat-ic-if-ol′-ĭ-us
Staun-to′-nĭ-a
staur-ac-an′-tha
Staur-ac-an′-thus
Staur-an-the′-ra
Staur-i′-tis
Staur-og-lōt′-tis
staur-oph-yl′-lum
Staur-op′-sis
Staur-os-tig′-ma
Steel′-ĭ-i
Steen-ham′-mer-a
Steetz-ĭ-a′-na
Steg-nog-ram′-me
steg-nog-ram-mŏ-i′-dēs
Steg-o′-sĭ-a
Stei-ger-ĭ-a′-na
Stein′-ĭ-i
Stel-eph-u′-ros
Stel′-is
stel′-la
Stel-la′-rĭ-a
stel-la′-ris
stel-la′-ta
stel-la-ta′-rum
stel-la-tif-ol′-ĭ-um
Stel-le′-ra
Stel-le′-ri
Stel-le-rĭ-a′-na
stel-lig′-er-um
stel-lul-a′-tum

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in slĕn′-der; ē as in v*ē′*-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ŷ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Steltz′-ner-i
Stem-ma′-rĭ-a
Stem-mat′-ĭ-um
Ste-mo′-dĭ-a*
Ste′-mon-a
Ste-mon-ac-an′-thus
Sten-ac′-tĭs
Sten-an′-drĭ-um
Sten-an-the′-ra
Sten-an′-thĭ-um
Sten′-ĭ-a
Sten-oc-ar′-pus*
sten-oc-eph′-al-a
sten-och-i′-lum
Sten-och-i′-lus
Sten-och-læ′-na
Sten-oc-or′-yn-e
Sten-og-as′-ter
Sten-og-as′-tra
Sten-og-lōs′-sum
Sten-og-lōt′-tis
sten-og′-yn-e
Sten-ol-o′-ma
Sten-om-es′-son
sten-op-et′-al-a
sten-oph-yl′-lum
Sten-op′-ter-a
Sten-orh-yn′-chus
Sten-os-e′-mĭ-a
sten-os-ep′-al-us
Sten-os-o-le′-nĭ-um
Sten-os-per-mat′-ĭ-on
Sten-os-te′-mum
Sten-os′-tom-um
Sten-ot-aph′-rum
Steph-an-an′-dra*
Steph-a′-nĭ-a
Steph-an′-ĭ-um
Steph-an-oc′-om-a
Steph-an-ol-i′-rĭ-on
Steph-an-om-er′-ĭ-a
Steph-an-oph′-or-um
Steph-an-oph-y′-sum
Steph-an-o′-tis
Ster-cor-a′-rĭ-um
Ster-cul′-ĭ-a
Ster-cul-ĭ-a′-cĕ-æ
Ster-cul′-ĭ-ĕ-æ
Ster-ĕ-os-an′-dra
Ster-ĕ-ox′-yl-on
Ster′-ĕ-u-um
Ste-rig′-ma
Ste-rig-mos-te′-mōn
ster′-il-is
Ster-iph-o′-ma
Ste′-ris
Stern-berg′-ĭ-a
Stern-berg′-ĭ-i
Steud-el′-ĭ-a
Steud′-ner-a
Ste-ve′-nĭ-a
Ste-ve′-nĭ-i
Ste-ven′-sĭ-i
Ste-ven-so′-nĭ-a
Ste′-vĭ-a
Stew-art′-ĭ-a
Stew-art′-ĭ-i
Stib-a′-sĭ-a
Stich-on-eu′-ron
Stick-man′-nĭ-a
Stifft′-ĭ-a
Stig-maph-yl′-lon
Stig-mar-o′-ta
stig-mat′-ic-um
stig-mo′-sum
Stil-ag-in′-ĕ-æ
stil-a′-ta
Stil′-bĕ-æ
Stil-ling-flee′-tĭ-a
Stil-ling′-ĭ-a
Sti′-pa
sti-pit-a′-tum*
stip-ul-a′-cĕ-a
stip-ul-a′-ris
stip-ul-a′-ta
Stir-ling′-ĭ-i
Stiz-ol-ob′-ĭ-um
Stob-æ′-a
Stob-art-ĭ-a′-na
Stock′-ĭ-i
stœch′-ad-is
Stœch′-as
Stokes′-ĭ-a*
stol-o-nif′-er-a
Sto′-nĕ-i
Storck′-ĭ-i
Stor-i-e′-ri
Sto′-ry-i
Strach′-ey-i
stra-min′-ĕ-a
stra′-min-is
Stram-o′-nĭ-um
Străn′-gĕ-a
stran-gul-a′-ta
Strang-ways′-ĭ-i
Stran-væ′-sĭ-a
Strat-ĭ-o′-tēs
Strav-a′-di-um
Streb-lan-the′-ra
Streb-lorh-i′-za
Streb′-lus
Strel-itz′-ĭ-a
Strep′-sĭ-a
Strep-tan-the′-ra
Strep-tan′-thus
Strep′-tĭ-um
Strep-toc-ar′-pus
strep-top-et′-al-a
strep-toph-yl′-la
Strep′-top-us
Strep-tos-o′-lēn
stri-æ-for′-mis
strĭ-a-tel′-lum
strĭ-a′-tul-um
strĭ-a′-tum
stric′-ta
stric-tif-lo′-ra
Strig-il′-ĭ-a
strig-il-lo′-sa
strig-o′-sa
strig-ul-o′-sum
strĭ-ol′-a
strĭ-ol-a′-tus
Strob′-il-a*
strob-il-a′-cĕ-a
Strob-il-an′-thēs
Strob-il-or′-ach-is
Strob′-us
Stro-man′-the
Stro-mat-op′-ter-is
Stroph-an′-thus
Stroph-ol-i′-rĭ-on
Stru-ker′-ĭ-a
Stru-ma′-rĭ-a
stru-ma′-rĭ-um
stru-ma′-tum
strup-if-ol′-ĭ-a
Stru′-thĭ-ol-a
Stru-thĭ-op′-ter-is
Stru′-thĭ-um
Strych′-nos
Stu-art′-ĭ-a
Stu-art-ĭ-a′-na
Stu-art′-ĭ-i
Sturm′-ĭ-a
Stur-tev-ant′-ĭ-i
Sty-la′-go
Sty-lan′-dra*
Sty-lid′-ĭ-ĕ-æ
Sty-lid′-ĭ-um
Sty-lim′-nus
Sty′-lis
Sty-loc-or′-yn-e
Sty-log-lōs′-sum
Sty-lol′-ep-is
Sty-loph′-or-um
sty-lo′-sa
Sty-los-an′-thēs
Sty-lu′-rus
Sty-pan′-dra
Styph-el′-ĭ-a
styph-el-ĭ-ĕ-i′-dēs
Styph-nol-ob′-ĭ-um
Styr-a′-cĕ-æ
styr-ac-if′-lu-a
styr-ac-if-ol′-ĭ-a
Styr-an′-dra
Styr′-ax
Suæ′-da
sua′-vĕ
sua′-vĕ-ol-ens
sua-vis′-sim-um
sub-ac-au′-lis
sub-al-pi′-na
sub-aur-ic-ul-a′-tum
sub-bif-lo′-ra
sub-car-no′-sum
sub-cor-da′-ta
sub-cor-tic-a′-lis
sub-cort-ic′-ĭ-um
sub-dĭ-aph′-an-um
sub-e-den-ta′-ta
Su′-ber*
su-ber-cul-a′-ta
sub-e-rec′-ta

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*: ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*: ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

su-ber-if-ol′-ĭ-a
su-ber-o′-sa*
sub-e-ro′-sa*
sub-fal-ca′-tum
sub-glau′-ca
sub-hir-tel′-la
Sub-li′-mĭ-a
sub-lu-na′-tum
sub-mer′-sum
sub-per-en′-nis
sub-pet-ĭ-ol-a′-tum
sub-pin-na-tif′-id-a
sub-quin-quef′-id-um
sub-rep-an′-dum
sub′-seq-ua
sub-ses′-sil-is
sub-sin-u-a′-tum
sub-ter-ra′-nĕ-um
sub-tig-na′-tum
sub-ti-lis′-sim-us
sub-tu-ber-cul-a′-ta
Su-bul-a′-rĭ-a
su-bul-a′-tum
sub-um-bel-la′-ta
sub-ves-ti′-tum
sub-vil-lo′-sa
sub-vol-u′-bil-e
suc-ce-da′-nĕ-a
suc-cir-ub′-ra
Suc-ci′-sa
suc-cot-rĭ′-na
Suc-co′-vĭ-a
suc-cul-en′-tum
Suc-cu′-ta
sud-bur-y-en′-sis
sue′-cic-a
suf-fo-ca′-tum
suf-frut-es′-cens
suf-frut-ic-o′-sa
suf-ful′-ta
Su-ka′-na
sul-ca′-tum
sul-cic-ol′-lis
Sul-liv-ant′-i
sul-phur′-ĕ-a
Sul-ta′-ni
su-ma-tra′-na
Sum′-bul
Sum-un′-tĭ-a
sun-da′-ic-a
sund-en′-sĕ
Su-ni′-pi-a
sup-erb′-ĭ-ens
sup-erb′-um
sup-er-cil-ĭ-a′-rĕ
sup-er′-flŭ-a
sup-er-pŏ-e′-tic-us
sup-ra-so-rif′-er-um
sur-cu-lo′-sa
su-rin-am-en′-sis
Su-ring-ar′-ĭ-i
sur-rej-a′-num
sur-ru-cuch-en′-sĕ
Su-sar′-ĭ-um
su-si-a -na

sus-pen′-sa
Suth-er-land′-i
Suth-er-land′-ĭ-a
Su-tri′-na
Sut-to′-nĭ-a
su-tu-ra′-lis
Su-wor-ow′-i
Swain′-son-a
Swam-mer-dam′-ĭ-a
Swan-ĭ-a′-na
Swan-nĭ-a′-num
Swartz′-ĭ-a
Swartz′-ĭ-a′-na
Swartz′-ĭ-i
Swert′-ĭ-a
swert-ĭ-æ-fol′-ĭ-a
Swert′-ĭ-i
Swiet-en′-ĭ-a
Sy-ag′-rus
Sych-in′-ĭ-um
Sy-com-o′-rus
Sy-kes′-ĭ-a*
syl-het-en′-sĕ
syl-va′-tic-a
Syl-ves′-trēs
syl-ves′-tris
syl-vic′-ol-a
Sy′-mĕ-a
Sy-mĕ-a′-na
Sym-phach′-ne
Sym-phor′-ĭ-a
Sym-phor-ic-ar′-pus
Sym-phy̆-an′-dra
Sym-phy̆-og-lŏs′-sum
Sym-phy̆-os-te′-mŏn
Sym′-phyt-um
Sym-pĭ-ez′-a
Sym-ploc-ar′-pus
Sym′-ploc-os
Syn-ad-e′-nĭ-um
Syn-an′-dra
Syn-an-the′-rĕ-æ
Syn-aph-leb′-ĭ-um
Syn-ar′-rhen-a*
Syn-ech-an′-thus
Syn-gen-es′-ĭ-a
Syn-gon′-ĭ-um
Syn-gram′-me
Syn-net′-ĭ-a
Syn-not′-ĭ-a
Syn′-siph-ōn
syph-il-it′-ic-a
syr′-ĭ-ac-us
Sy-ring′-a*
sy-ring-æ-flo′-rum
sy-ring-æ-fol′-ĭ-a
sy-ring-el′-la
sy-ring-if-ol′-ĭ-a
Sy-ring-o′-dĕ-a
sy-ring-oth-yr′-sis
Syr′-phid-æ
Syr′-phus
Sys-treph′-ĭ-a
sys′-tyl-a
Sys′-tyl-æ

Syz-yg′-ĭ-um
Szo-vit-sĭ-a′-num
Szo-wit′-zĭ-a

Tab-a′-cum
Tab-eb-u′-i-a
Tab-er-næ-mon-ta′-na
Tab-er-næ-mon-ta′-ni
tab-ul-a′-re
tab-ul-if-or′-mis
Tac′-ca
Tac-ca′-cĕ-æ
tac-cæ-fol′-ĭ-um
Tac-ca′-rum
Ta′-chi-a
Ta′-chi-ad-e′-nus
Ta-chi-ga′-li-a
Tach′-in-a
Tac-so′-ni-a
tæd-ig′-er-a
Tæn-ĭ-oc-ar′-pum
Tæn-ĭ-oph-yl′-lum
Tæn-ĭ-op′-sis
Tæn-i′-tis
Tæt′-si-a
Tag-e′-tēs
tag-e-tif-lo′-ra
ta-hi-ten′-sis
Tain′-ĭ-a
Tal-au′-ma
Tal-bot′-ĭ-a
Tal-i-e′-ra
Ta-lig-a′-lĕ-a
Tal-i′-num
Tal-i′-sĭ-a
Tal′-pa
tam-ar-in-dif-ol′-ĭ-a
Tam-ar-in′-dus
tam-ar-is-cif-ol′-ĭ-a
Tam-ar-is-cin′-ĕ-æ
Tam′-ar-ix
tam-nŏ-i′-dēs
Tam′-nus
Tam-o′-nĕ-a
Ta′-mus
tan-ac-e′-tif-ol′-ĭ-a
Tan-ac-e′-tum
Tan-ghin′-ĭ-a
Tank-er-vil′-lĕ-æ
Tank-er-vil′-lĭ-a
Ta-on-a′-bo
Tap-ei-on-i′-tēs
Taph-ri′-na
Ta′-pĭ-a
ta-pi-ŏ-i′-dēs
Ta-pog-o′-mĕ-a
tar-ax-ac-if-ol′-ĭ-a
Tar-ax′-ac-um
Tar-chon-an′-thus
tar-dif-lo′-rus
tar-di′-va
Tar-en′-na
Tar-gi-o′-ni

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; y̆ as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ouse*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

tar-tar′-ĕ-a
tar-tar′-ic-um
Tar-ton-raĭ′-ra
Tasch-en-berg′-ĭ
Tas-man′-nĭ-a
ta-tar′-ic-a
Tat-ton-ĭ-a′-num
Tat-u′-la
taur′-ic-a
taur-i′-na
Taus-che′-rĭ-a
Tav-er-nĭ-e′-ra
Tax-an′-them-a
Tax′-ĕ-æ
tax-if-ol′-ĭ-a
Tax-o′-dĭ-ĕ-æ
Tax-o′-dĭ-um
tax-ŏ-i′-dēs
Tax′-us
ta-yg-et′-ĕ-a
Tay′-lor-i
Taz-et′-ta
Tchih-atch-ew′-ĭ-i
Tec-o′-ma
Tec-oph-il-æ′-a
Tec′-ton-a
tec-to′-rum
tec′-tum
Teed′-ĭ-a
Tees-da′-lĭ-a
Te-gan′-ĭ-um
te-hu-ac-en′-sis
Tel-am-o′-nĭ-us
Tel-an-the′-ra
Tel-a′-rĭ-us
Tel-ei-an-the′-ra
Te-lek′-ĭ-a
Te-lem′-ach-i
Te-leph-ĭ-as′-trum
te-leph-ĭ-ŏ-i′-dēs
Te-leph′-ĭ-um
Tel-fair′-ĭ-a
Te-lip-o′-gŏn
Tel′-lim-a
Tel-mat-ei′-a
te-lon-en′-sis
Te-lo′-pĕ-a
Temple-ton′-ĭ-a
te-mul-en′-tum
ten-a-cis′-sim-a
Ten-ag-ei′-a
Te′-nar-is
ten′-ax
Ten-da′-na
ten-eb-ric-o′-sus
ten-eb-ro-sa′-na
ten-el′-la
ten′-er-um
Ten-o-rĕ-a′-na
Ten-o′-rĭ-i
ten-ta-cul-a′-ta
ten-ta′-cul-um
Ten-thre-din′-id-æ
ten-thre-din-if′-er-a
Ten-thre′-do
ten′-ŭ-ĕ
ten-ŭ-ic-au′-lis
ten-ŭ-if-lo′-rum
ten-ŭ-if-ol′-ĭ-um
ten-ŭ-il′-ob-us
ten′-ŭ-ĭ-or
ten′-ŭ-is
Tep-ej-il-o′-te
Teph-ri′-tis
teph-ros-an′-thos
Teph-ro′-sĭ-a
Ter-am′-nus
Ter-at-oph-yl′-lum
ter-eb-in-thif-ol′-ĭ-us
ter-eb-in-thin-a′-cĕ-um
Ter-eb-in′-thus
ter′-ēs
ter-et-ic-au′-lis
ter-et-if-ol′-ĭ-us
Ter′-mēs
Ter-min-a′-lĭ-a
Ter-min-a′-lis
ter-na′-ta
Ter-na′-tĕ-a
ter-na-ten′-sis
ter-na′-tĕ-um
Ter-naux-ĭ-a′-na
ter-nif-ol′-ĭ-a
Tern-stræm′-ĭ-a
Tern-stræm-ĭ-a′-cĕ-æ
Terp-nan′-thus
ter-res′-tris
Tes-sa′-rĭ-a
tes-sel-la′-tum
Tes-ta-cel′-la
tes-ta′-cĕ-um
tes-tic-ul-a′-tum
Tes-tu-din-a′-rĭ-a
Te′-ta
tet-rac-an′-tha
Tet-rac-ar′-pum
Tet-rac′-er-a
Tet′-rach-is
tet-rac′-op-is
Tet-rad-e′-nĭ-a
Tet-rad′-ĭ-um
Tet-rad-yn-am′-ĭ-a
Tet-rag-as′-tris
Tet-rag-o′-nĭ-a
Tet-rag-o-nĭ-a′-cĕ-æ
Tet-rag-o-nol′-ob-us
Tet-rag-o′-noth-e′-ca
tet-rag-o′-nus
tet-rag′-yn-um
Tet′-rah-it
Tet-rah-i′-tum
Tet′-ral-ix
Tet-ram′-el-ēs
Tet-ram-er′-ĭ-um
Tet-ram-i′-cra
tet-ran′-dra
Tet-ran-e′-ma
Tet-ran-eu′-ra
Tet-ran-the′-ra
Tet-ran′-thus
Tet-ran-ych′-id-æ
Tet-ran′-ych-us
Tet-rap-as′-ma
Tet-rap-el′-tis
tet-raph-yl′-lum
tet-rap′-la
tet-rap-las′-ĭ-um
Tet-rap-o′-gŏn
tet-rap′-ter-a
Tet-rap′-ter-ys
tet-ră-quet′-ra
tet-ras-per′-ma
tet-ras′-pis
Tet-rath-e′-ca
Tet-raz-yg′-ĭ-a
teuc-rĭ-ŏ-i′-dēs
Teuc′-rĭ-um
Teus′-cher-i
Teu-ton′-ĭ-a
tex-a′-na
tex-en′-sis
Tex′-tor-i
Teys-man′-nĭ-a
Teys-man′-nĭ-a′-na
Thal-am′-ĭ-a
Thal-a′-sĭ-um
thal-as′-sic-a
Tha′-li-a
Tha-lĭ-a′-na
thal-ic-trif-ol′-ĭ-a
thal-ic-trŏ-i′-dēs
Thal-ic′-trum
Tham′-nĕ-a
Tham-noch-or′-tus
Tham-nop′-ter-is
Thap′-si
Thap′-sĭ-a
thap-sŏ-i′-dĕ-a
Thap′-sus
The′-a
the-ba′-ic-a
*Thec′-a**
The-cos-te′-le
the-if′-er-a
The′-la*
The-leb′-ol-us
Thel-em-an-nĭ-a′-na
The-leph′-or-a
The-les-per′-ma
The-lig′-on-um
Thel-lus-on′-ĭ-i
The-lyg-on′-ĕ-æ*
The-lyg′-on-um
The-lym-i′-tra
The-lyp-o′-gŏn
The-lyp′-ter-is
the-lyp-ter-ŏ-i′-dēs
Them-is-toc-le′-sĭ-a
The-nar′-dĭ-a
The-ob-ro′-ma
the-ŏ-i′-dēs
Thĕ-oph-ras′-ta
The′-ra
The-re′-sĭ-a
ther-ma′-lis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten: ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in **muscular**, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ther′-mĭ-a
Ther-mop′-sis
The-rol-ep′-ta
The-ro-po′-gōn
The′-si-um*
Thes-pes′-ĭ-a
The-re′-tĭ-a
thi-an-schan′-ic-a
Thi-baud′-ĭ-a
Thi-baut-ĭ-a′-na
Thi-baut′-ĭ-i
Thie-baut′-ĭ-a
Thlad-ĭ-an′-tha
Thlas′-pi
Thom′-as-i
Thom-as′-ĭ-a
Thom-as′-ĭ-i
Thomp-so′-ni
Thomp-so-nĭ-a′-na
Thom′-so-næ
Thom′-so-ni
Thom-so′-nĭ-a
Thom-so-nĭ-a′-num
Thou-ars′-ĭ-i
Thou-i′-ni
Thou-i′-nĭ-a
Thri′-nax
Thrin′-cĭ-a
Thrips
Thrix-sper′-mum
Thrў-al′-lis
Thryp-tom′-en-e
Thu′-ja
Thu-jop′-sis
Thun-berg′-ĭ-a
Thun-berg-ĭ-a′-num
Thun-berg′-ĭ-i
Thun′-ĭ-a
Thu-re′-ti
thu-rif′-er-a
thu-rif-ra′-ga*
Thuy′-a
thuy-ŏ-i′-dēs
Thuy-op′-sis
Thwaites′-ĭ-i
Thy-a′-na
Thy-lac-an′-tha
Thy-lac-op′-ter-is
Thym′-bra
Thym-el-æ′-a
Thym-el-æ-a′-cĕ-æ
thym-if-ol′-ĭ-a
thym-ŏ-i′-dēs
Thym′-us*
Thyr-sac-an′-thus
Thyr-san′-thus
thyr-sif-lo′-rum
thyr-sŏ-i′-dĕ-a
Thyr-sop′-ter-is
Thyr′-sul-a
thys-an-o′-dēs
thys-an-o-tŏ-i′-dēs
Thys-an-o′-tus
thys-san-ol′-ep-is
Tĭ-a-rel′-la

Tĭ-a-rid′-ĭ-um
ti-bi′-cin-is
Tib-ouch-i′-na
Ti-bour′-bou
Tic-o′-rĕ-a
Ti-ga′-rĕ-a
Tig′-lĭ-um
Tig-rid′-ĭ-a
tig-ril-la′-rĭ-a
tig-ri′-num
Til-e′-sĭ-a
Til′-ĭ-a
Til-ĭ-a′-cĕ-æ
til-ĭ-a′-cĕ-um
Til-i-a′-cor-a
Til′-ĭ-æ
til-ĭ-æ-flo′-ra
Til-læ′-a
Til-land′-sĭ-a
til-land-sĭ-ŏ-i′-dēs
Til-le′-tĭ-a
Tim′-mĭ-a
Ti-nan′-tĭ-a
tinc-to′-rĭ-a
tinc′-tum
Tin′-ĕ-a
Tin-ĕ-i′-na
ting′-ens
ting-it-a′-num
ti-nif-ol′-ĭ-a
Tin′-ne-a
Ti′-nus
Tip′-ul-a
Tip-ul-a′-rĭ-a
Tip′-ul-id-æ
tip-ul-if-or′-mis
Tis-che′-rĭ-a
Ti-ta′-num
Ti-tho′-nĭ-a
tith-ym-al-ŏ-i′-dēs
Tith-ym′-al-us
Tit-rag′-yn-e
Titt-man′-nĭ-a
Tob-i′-ra
tob-ol-skĭ-a′-num
Toc-o′-ca
Toc-oy-e′-na
Tod-ar-o′-a
Tod-da′-lĭ-a
To′-dĕ-a
To-field′-ĭ-a
Tol-lĭ-a′-na
Tol-mie′-a
Tol′-pis
Tol-u-if′-er-a
to-men-tel′-la
to-men-to′-sa
To′-mex
Tom-ic′-id-æ
Tom′-ic-us
tom-ĭ-ol′-oph-a
Tom-mas-i′-ni-a′-na
To-ne-lĭ-a′-na
To-ne′-lĭ-i
ton-kin-en′-sis

Ton-ning′-ĭ-a
Ton-sel′-la
Ton-ta′-nĕ-a
Ton-tel′-ĕ-a
Too′-na
To′-ra
Tor-dyl′-ĭ-um
Tor-e′-nĭ-a
Tor-ing′-o
Tor-men-til′-la
tor-min-a′-lis
Tor-ne′-lĭ-a
To′-ro
Tor-re′-sĭ-a
Tor-rey′-a
Tor-rey′-i
Tor-ru′-bĭ-a
tor′-ta
tor′-til-is
Tor-tric′-id-æ
Tor-tric-i′-na
Tor′-trix
Tor′-tul-a
tor-tul-a′-ta
tor-tŭ-o′-sa
Tor′-ul-a
tor-ul-o′-sa
Tot-a′-ra
Tot′-ta
Tou′-mat-ou
Tour-nef-or′-tĭ-a
Tour-nef-or′-tĭ-
Tour-re′-tĭ-a
to-va-ren′-sis
To-va′-rĭ-a
To-vom-i′-ta
Towns′-hend-i
tox-ic-a′-rĭ-a
Tox-ic-od-en′-dron
Tox-ic-oph-læ′-a
tox′-ic-um
tox-if′-er-a
Tox-os-tig′-ma
To′-za
Tra-che′-a
Trach-e-lĭ-ŏ-i′-dēs
Trach-e′-lĭ-um
Trach-e-los-per′-mum
Tra-chyc-ar′-pus*
Tra-chym′-en-e
Tra-chyn-o′-tĭ-a
Tra-chys-te′-mon
Tra-chyt-el′-la
Trad-es-can′-ti
Trad-es-can′-tĭ-a
Trag-ac-an′-tha
trag-ac-an′-thæ
Trag′-ĭ-a*
Trag′-ĭ-um
Trag-op-o′-gi-pra-ten′-sis
Trag-op-o′-gōn
Trag′-us
Tra′-ma
Tra′-met-ēs
trans-pa′-rens

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ă*p-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined: ĭ as in th*ĭn*; ī as in mach-*ī′*-nist: ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ai*n; au as *ou* in h*ou*se; **g, c, and ch, always hard,** as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Tra′-pa
trap-e-sif-or′-me
trap-e-zif-or′-mis
trap-e-zĭ-ŏ-i′-dēs
Trat-ten-ik′-ĭ-a
Traut-vet-ter′-ĭ-a
trav-an-co-ren′-sis
Trav-ers′-ĭ-i
Tre-cu-lĕ-a′-na
Tre-cu′-lĭ-a
Treis′-ĭ-a
Tre-man′-dra
Tre-man′-drĕ-æ
Tre-man′-thus
Trem′-ex
trem′-ul-a
Trem′-ul-æ
trem-ul-if-or′-mis
trem-ul-ĕ-i′-dēs
Tren-tep-oh′-lĭ-a
Trev-e′-sĭ-a
Trev-ir-a′-na
Tre-vo′-a
Trew′-ĭ-a
trĭ-ac-an′-thus
Trĭ-ach′-yr-um
trĭ-ad-e′-nĭ-um
Trĭ-ad′-ic-a
Tri-a′-næ
trĭ-an′-dra
Tri-a′-nĕ-a
trĭ-ang-ul-a′-ris
trĭ-ang-ul-a′-ta
trĭ-ang′-ul-um
Trĭ-an′-them-a
trĭ-ar-is-tel′-la
Trĭ′-as
Trib-lem′-ma
Trib-rach′-ĭ-um
Trib′-ul-us
Tric-an′-tha
tric-aud-a′-ta
Tric-er-ai′-a
Trich-æ′-ta
Trich-æ′-te
Trich-an′-tha*
Trich′-ar-is
Trich-il′-ĭ-a
Trich-in′-ĭ-um
Trich-ĭ-os-o′-ma
Trich-ob′-as-is
trich-oc-al-yc-i′-na
Trich-oc-ar′-pa
Trich-oc-au′-lon
Trich-oc-en′-trum
Trich-oc-eph′-al-us
Trich-oc′-er-os
trich-oc′-lad-a
trich-o′-dēs
Trich-od-es′-ma
Trich-o′-dĭ-um
Trich-og-as′-trēs
Trich-og-lōt′-tis
trich-ŏ-i′-dĕ-um
Trich-ol-æ′-na
trich-om′-an-e-fol′-ĭ-um
Trich-om′-an-ēs
trich-om-an-ŏ-i′-dēs
Trich-on-e′-ma
Trich-op-et′-al-um
Trich-oph′-or-um
trich-oph-yl′-lum
Trich-op-i′-lĭ-a
Trich-op′-ter-is
Trich-os-ac′-me
trich-os-an′-tha
Trich-os-an′-thēs
Trich-os′-ma
Trich-os-o′-rus
trich-os-per′-ma
Trich-os′-por-um
Trich-os-te′-ma
trich-ot′-om-um
Tric-lis′-sa
tric-oc′-cum
tric′-ol-or
tric-ol-or′-um
Tric-on′-dyl-us
tric-or′-ne
Tric-or′-yn-e
Tric′-rat-us
Tric-us-pid-a′-rĭ-a
tric-us-pid-a′-ta
Tric-us′-pis
Tric-yr′-tis
trid-ac′-tyl-a
trid-ac-tyl-i′-tēs
Tri′-dax
Trid′-ens
trid-en-ta′-tum
Trid-en′-tĕ-a
Trid′-ĭ-a
Trid′-ym-us
Trĭ-en-ta′-lis
trif-as-cĭ-a′-ta
trif′-id-a
trif-lo′-rum
trif-ol′-ĭ-a
trif-ol-ĭ-a′-ta
Trif-ol′-ĭ-i
Trif-ol′-ĭ-um
trif-ur-ca′-tum
Trif-ur′-cĭ-a
Trig-lo′-chin
Trig-lōs′-sum
Trig-o′-nel-la
Trig-o′-nĭ-a
Trig-o-nid′-ĭ-um
trig-o-noc-au′-lis
Trig-o-noth-e′-ca
Tri-que′-ra
trig′-yn-um
tril-i-nĕ-a′-ta
tril-in′-guĕ
Tril-i′-sa
Tril-i′-sĭ-a
Tril′-ix
Tril-lĭ-a′-cĕ-æ
Tril′-lĭ-um
tril′-ob-a
tril-ob-a′-tum
tril′-ob-um
Tri-men-ĭ-a′-nus
Trim-er-is′-ma
trim-es′-tris
Trim-ez′-ĭ-a
trin-er′-vĭ-a
trin-er′-vis
Tri′-nŭ-a
trin-ot-a′-tus
Trĭ-od′-i-a
trĭ-oic′-us
Trĭ-o′-len-a
trĭ-on-if-lo′-ra
Trĭ′-on-um
Trĭ-op′-ter-ys
trĭ-or-ni-thoph′-or-a
Trĭ-os′-tĕ-um
trip-ar-ti′-ta
trip-et′-al-a
Trip-et-al-ei′-a
trip-et-al-ŏ-i′-dēs
Trip-et-e′-lus
Triph-æ′-na
Triph-as′-ĭ-a
Triph′-or-a
Triph-rag′-mĭ-um
triph-yl′-la
Triph-y-sa′-rĭ-a
Trip-lad-e′-nĭ-a
Trip-la′-ris
Trip-leu′-ra
trip-lin-er′-va
trip-od-a′-lis
Trip-ol′-ĭ-um
Trip′-sac-um
trip′-ter-is
trip′-ter-on
Trip-ter-os-per′-mum
Trip-ter-yg′-ĭ-um
Trip-til′-ĭ-on
trip-ud′-ĭ-ans
trip-unc-ta′-na
trip-unc-ta′-ta
tri-quet′-rum
Tris-e′-tum
Tris′-ĭ-ol-a
Tris-mer′-ĭ-a
Tris-tag′-ma
Tris-tan′-ĭ-a
tris′-tĕ
Trit-el-ei′-a
trit-er-na′-ta
Trith-ri′-nax
Tri′-tic-i
Tri′-tic-um
Trit′-om-a*
Trit-om-an′-the
Trit-om′-ĭ-um
Tri-to′-nĭ-a
Tri-um-fet′-ta
trĭ-um′-phans
Trĭ-u-rid′-ĕ-æ
Trĭ-u′-ris
triv-ĭ-a′-lis

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in sl*ĕn′*-der; ē as in v*ē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist: ŏ as in r*ŏt′*-ten: ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei. as *ai* in *pain*: au as *ou* in *house*: g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Trix-a -go
Trix′-is
Triz-eux′-is
Tro-che′-tĭ-a
Troch′-il-us
Troch-is-can′-thēs
Troch-oc-ar′-pa
Troch-os-tig′-ma
tro-glod′-it-ēs
Trol′-lĭ-us
Tro-mot′-rich-e
Trop-æ′-ol-ĕ-æ
Trop-æ′-ol-um*
Troph-ĭ-an′-thus
Troph′-is
trop′-ic-us
Trop-id′-ĭ-a*
Tros
tros′-sul-a
Trŏx′-im-on
trul-lif′-er-um
Trun-ca′-rĭ-a
trun′-ca-ta
trun-ca-tel′-lum
trun-ca′-tal-um
Try-mal′-ĭ-um
Tryph-æ′-na
Tsi-a′-na
tso-mo-en′-sis
Tsu′-ga
tub-a′-ta*
Tu-bĕ-a′-na
Tu′-ber*
Tu-ber-a′-cĕ-i
Tu-ber-ci′-nĭ-a
Tu-ber-cul-a′-rĭ-a
tu-ber-cul-a′-ta
tu-ber-cul-o′-sus
tu-ber-o′-sa
tub-ic′-in-a
tub-if′-er-a
tub-if-lo′-rus
tub-is′-path-a
tub-ul-o′-sa
Tuck′-er-i
Tuck-er-man′-nĭ-a
tu-cu′-man-en′-sis
Tul-ba′-ghĭ-a
Tu′-lip-a
Tu′-lip-æ
tu-lip-if′-er-a
tu-lip-if-ol′-ĭ-a
tu-lip-if-or′-mis
Tum′-bo-a
tum′-id-a
Tu′-na
tun-bridg-en′-sĕ
Tun′-ga
Tun′-ic-a
Tu′-pa
Tup-id-an′-thus
Tu-pis′-tra
tu-pis-trŏ-i′-dēs
tur-bin-a′-ta
tur-bin-el′-lus
turc′-ic-a
tur′-gid-a
Tur-go′-sĕ-a
Tu-ri-al′-væ
tu′-rĭ-o
tu-rĭ-o-na′-na
turk-es-ta′-nic-a
Turn-bul′-lĭ-i
Tur′-ner-a
Tur-ner-a′-cĕ-æ
Tur′-ner-i
Tur-pin′-ĭ-a
Tur-pin′-ĭ-i
Tur-ræ′-a
Tur-ri′-tis
Tus-sa′-ca
Tus-sa′-cĭ-a
Tus-sil-a′-gin-is
Tus-sil-a′-go
Tweed′-ĭ-a
Tweed-ĭ-a′-na
Tweed′-ie-i
Ty′-che-a
Ty′-chĭ-us
Ty-dæ′-a
Ty-er-man′-ni
Tyl-en′-chus
Tyl-och-i′-lus*
Tyl-og-lōs′-sa
Tyl-oph′-or-a
Tym-pan-an′-the
Ty′-pha
Ty-pha′-cĕ-æ
ty′-phin-a
Typh-loc-y′-ba
Ty-pho′-nĭ-um
Ty′-phul-a
typ′-ic-a
typ-og′-raph-us
tyr-ĭ-an′-thin-a
tyr-o-len′-sis
Ty-ton′-ĭ-a

U-cri-a′-na
Ud-o′-ra
U-ge′-na
Ug′-ni
U′-lex
u-lic′-in-a
u-li-gin-o′-sum
Ul-lo′-a
Ul-lu′-cus
ul-ma′-rĭ-us
Ul′-mĕ-æ
Ul′-mi
ul-mif-ol′-ĭ-a
Ul′-mus
U-los′-tom-a
Ul-ux′-ĭ-a
um-bel-la′-tum
Um-bel-lif′-er-æ
Um-bel-lul-a′-rĭ-a
um-bil-i′-cŏ-i′-dēs
Um-bil-i′-cus*
um-bo-na′-tum
um-bra-cul-if′-er-a
Um-brel′-la
um-bro′-sa
U-na-nu′-ĕ-a
Un-ca′-rĭ-a
un′-cĭ-a
Un-cif′-er-a
un-ci-na′-ta
un-ci-nif-ol′-ĭ-a
Un-ci′-nul-a
un-da′-ta
un-dec-im-punc-ta′-ta
un-dul-æ-fol′-ĭ-a
un-dul-a-tif-ol′-ĭ-a
un-dul-a′-tum
U′-ned-o*
Ung′-er-i
Ung-na′-dĭ-a
Un-gua′-cha
un-guic-ul-a′-ris
un-guic-ul-a′-ta
un-guip-et′-al-a
un-gul-if-ol′-ĭ-a
u-nic′-ol-or
u-nic-or′-nĕ
u-nid-en-ta′-tum
u-nif-lo′-ra
u-nil-at-er-a′-le
U′-nĭ-ol-a
U-nis-e′-ma
u-ni′-tum
u-niv-it-ta′-ta
U-no′-na
U-ral′-ep-is
U-ral-ep′-sis
u′-ral-um
U-ran-an′-thus
U-ran′-ĭ-a
Ur-a′-rĭ-a
Ur-cĕ-ol-a′-rĭ-a
ur-cĕ-ol-a′-tus
Ur-cĕ-ol-ĭ′-na
ur-cĕ-ol-o′-rum
U-rech-i′-tēs
U-re-din′-ĕ-æ
U-re′-do
Ur-e′-na
u′-rens
u-ren-tis′-sim-a
Urg-in′-ĕ-a
U-roc-ys′-tis*
U-rom′-yc-ēs
U-rop-ed′-ĭ-um
U-rop-et′-al-um
u-roph-yl′-la
U-rŏ-Skin′-ner-a
U-rŏ-Skin′-ner-i
U-ros′-path-a
U-ros-per′-mum
u-ros-tach′-ў-a
Ur-si′-nĭ-a
ur-si′-num
Ur-ti′-ca*

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in *psā′-lmist*; ĕ as in *slĕn′-der*; ē as in *vē′-ined*; ĭ as in *thĭn*; ī as in *mach-ī′-nist*; ŏ as in *rŏt′-ten*; ō as in *vō′-ter*; ŭ as in *pow′-er-fŭl*; ū as in *rū′-ler*; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; au as *ou* in *house*; g, c, and ch, always hard, as, for example, g in *good*, c in *muscular*, and ch in *Christian*. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Ur-ti-ca′-cĕ-æ
Ur-ti′-cæ
ur-ti-cæ-fol′-ĭ-a
ur-ti-ca′-rĭ-a
Ur-ti′-cĕ-æ
ur-ti-cif-ol′-ĭ-a
Ur-vil′-lĕ-a
u-sit-a-tis′-sim-um
us-ne-ŏ-i′-dēs
Us-pal-la-ten′-sis
us-su-ri-en′-sis
Us-te′-rĭ-a
Us-til-a-gin′-ĕ-i
Us-til-a′-go
us-tul-a′-ta
u-tah-en′-sis
U-ta′-nĭ-a
u′-til-e
u-til-is′-sim-a
U-tric-ul-a′-rĭ-a
U-tric-ul-a′-rĭ-ĕ-æ
u-tric-ul-a-rĭ-ŏ-i′-dēs
u-tric-ul-a′-ta
u-tric-ul-o′-sa
U′-va
U-va′-rĭ-a
U′-va-ur′-si
Uve-da′-lĭ-a
u-vif′-er-a
U-vul-a′-rĭ-a

Vac-ca′-rĭ-a
Vac-ci-nĭ-a′-cĕ-æ
Vac-ci-nĭ-el′-la
vac-ci-nif-ol′-ĭ-um
vac-ci-nĭ-if-ol′-ĭ-um
Vac-ci′-nĭ-um*
Va-chel′-lĭ-i
vac-il′-lans
vag′-ans*
va-gi-na′-lis
va-gi-na′-tum
Va-gi-nul-a′-rĭ-a
Vail-lan′-tĭ-a
Val-an′-tĭ-a
val-den′-sis
Val-de′-sĭ-a
Val-di′-vĭ-a
val-di-vĭ-a′-na
val-di-vĭ-en′-sis
val-en-ti′-na
Val-en-ti′-ni
Val-er-an′-di
Val-er-ĭ-a′-na
Val-er-ĭ-a′-nĕ-æ
Val-er-ĭ-a-nel′-la
val′-id-um
Val-la′-ris
Val-le′-sĭ-a
val-le′-sĭ-ac-a
Val-lis-ne′-rĭ-a
val-lis-ne-rĭ-æ-fol′-ĭ-a
Val-lo′-ta

Van-a′-rĭ-a
Van′-da
van-da′-rum
Van′-dĕ-æ
Van-del′-lĭ-a
Van-der-donck′-ĭ-i
Van-der-mees′-chĭ-i
Van-de′-sĭ-a
Van-es′-sa
Van-gue′-rĭ-a
Van-gui-e′-ra
Van-hout′-tĕ-a
Van-hout-tĕ-a′-num
Van-hout′-tĕ-ĭ
Van-il′-la
Van-ta′-nĕ-a
Van-Volx-em′-ĭ-i
vap-o-ra′-rĭ-us
Var-ga′-sĭ-a
var-ĭ-a′-bil-is
var′-ĭ-ans
var-ĭ-a′-ta
va-ric-o′-sum
var-ĭ-eg-a′-na
var-ĭ-eg-a′-ta
var-ĭ-if-or′-mis
var-ĭ-ol-a′-ris
var-ĭ-ol-a′-tum
var-ĭ-ol-o′-sa
var′-ĭ-um
Va-ro′-nĭ-a
Vas-co′-a
Vas-con-cel′-lĕ-a
vas′-ic-a
vas-ta′-trix
Vau-an′-thĕs
Va-va′-ga
Va-vang′-a
veg′-et-a
Veitch′-ĭ-a
Veitch-ĭ-a′-num
Veitch′-ĭ-i
Ve-la′-ga
ve-la′-ta
Vel-as-que′-zĭ-a
Vel-e′-zĭ-a
Vel′-la
Vel-lei′-a
vel′-lĕ-um
Vel-lo′-zĭ-a
Vel-lo-zĭ-a′-num
Vel-lo′-zĭ-ĕ-æ
Vel-theim′-ĭ-a
vel-u-ti′-na
Ven-a′-na
ven-e-na′-ta
ven-e-nif′-er-a
ven-e-no′-sum
ve′-nĭ-a
Ve-nid′-ĭ-um
ve-no′-sa
Ven-ten-a′-tĭ-a
ven′-ti
ven-til-a′-brum
Ven-til-a′-go

ven-tric-o′-sum
ve-nul-o′-sum
ven-us′-ta
Vep′-ris
ve′-ra
Ve-rat-ax′-us
ve-ra-trif-ol′-ĭ-a
Ve-ra′-trum
ver-ba-nen′-sis
Ver-bas′-cĕ-æ
ver-bas-cif-ol′-ĭ-a
Ver-bas′-cum
Ver-be′-na
Ver-be-na′-ca
Ver-be-na′-cĕ-æ
Ver-bes-i′-na
ver-e-cun′-dum
Ve-rei′-a
ve′-ris
Ver-lo′-ti
ver-mic-ul-a′-ris
ver-mic-ul-a′-ta
Ver-mif′-ug-a
ver′-na
ver-na′-lis
ver-nic-if′-er-a
ver-nic-o′-sa
ver′-nix
ver-nix′-ĭ-um
Ver-non′-ĭ-a
Ver-on-i′-ca*
ver-ru-cif′-er-a
ver-ru-co′-sa
Ver-schaf-fel′-tĭ-a
Ver-schaf-fel-tĭ-a′-na
Ver-schaf-fel′-tĭ-i
ver-sic′-ol-or
ver-tic-il-la′-ris
ver-tic-il-la′-tus
Ver-tic-il′-lĭ-um
Ver-tic-or′-dĭ-a
Ver-ul-a′-mĭ-a
ve′-rum
Ver-væ-nĕ-a′-na
ves′-ca
Ve-si-ca′-rĭ-a*
ve-si-ca′-rĭ-us
ve-si-ca′-tor
ve-si-ca-to′-rĭ-a
ve-si-ca′-trix
ve-si-cul-o′-sum
Ves-ling′-ĭ-a
Ves′-pa
ves-per-ti′-lĭ-o
Ves-per-ti-lĭ-o′-nis
ves-per-ti′-na
ves-pif′-er-a
ves-pif-or′-mis
Ves-pūc′-ci-a
ves-ta′-lis
Vest′-ĭ-a
ves-ti′-ta
vex′-ans
vex-a-ti′-vum
vex-il-la′-rĭ-um

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art′*; ā as in ps*ā′*-lmist; ĕ as in slĕn′-der; ē as in v*ē′*-ined; ĭ as in thĭn; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in v*ō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in *pain*; an as *ou* in house; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Vi-borg′-ĭ-a
vi-bur-nif-lo′-ra
vi-bur-nŏ-i′-dēs
Vi-bur′-num
Vic′-ĭ-a
Vic′-ĭ-æ
Vic′-tor
Vic-to′-rĭ-a
Vic-to′-rĭ-æ-Re-gi′-næ
Vic-to-rĭ-a′-lis
Vic-tor-ip-er-re′-a
Vid-a′-lĭ-i
Vieil-lard′-ĭ-i
Viel-lard′-ĭ-i
Vieus-seux′-ĭ-a
Vig-i-e′-ra
Vig-i-e′-ri
Vign′-a
Vig-nald′-ĭ-a
Vig-ui-e′-ra
Vil′-fa
Vil-lan-ov′-a
Vil-la-re′-sĭ-a
Vil-lar′-ĭ-a
Vil-lar′-sĭ-a
Vil-lar-sĭ-a′-na
Vil-lar′-sĭ-i
vil′-lic-a
vil-lif′-er-a
vil-lo′-sa
Vil-lo′-sæ
vil-lo′-sul-us
Vil-mor-i′-nĭ-a
Vil-mor-i-nĭ-a′-na
vi-min-a′-lis
Vi-min-a′-rĭ-a
vi-min′-ĕ-um
Vin′-ca
vin-cæ-flo -ra
vin-cent-i′-nus
Vin-cet-ox′-ic-um
vi-nĕ-a′-le
vi-nif′-er-a
vi-no′-sa
Vĭ′-ol-a
vĭ-ol-a′-cĕ-a
Vĭ′-ol-æ
vĭ-ol-æ-fol′-ĭ-um
vĭ-ol-æ-ŏ-i′-dēs
Vĭ-ol-a′-rĭ-ĕ-æ
vĭ-ol-es′-cens
Vi-or′-na
Vi-pa′-ni
Vi-ray′-a
vir′-ens
vir-es′-cens
Vi-rey′-a
vir-ga′-ta
Vir-gau′-rĕ-a
Vir-gil′-ĭ-a
vir-gin-a′-le
vir-gin′-ĕ-us
vir-gin-ĭ-a′-na
vir-gin′-ic-a
vir-gin-ĭ-en′-sis
Vir-gul-a′-rĭ-a
vir-gul-a′-tum
vir-id-a′-na
vir-id-ic-ol′-lis
vir-id-if-lo′-ra
vir-id-if-ol′-ĭ-a
vir′-id-is
vir-id-is′-sim-a
vir-id′-ul-a
Vi′-rol-a
Vis-ca′-rĭ-a
vis′-cid-a
vis-cid′-ul-a
vis-co′-sa
vis-co-sis′-sim-a
Vis′-cum
Vis-i-a′-nĭ-a
Vism′-ĭ-a
Vis-na′-ga
Visn′-ĕ-a
Vi-tal′-ba
Vi-tal-ĭ-a′-na
Vit-el-la′-rĭ-a
vit-el-li′-næ
vit-el-li′-num
Vi′-tex
Vi-tic-as′-trum
Vi-tic-el′-la
vi-tic′-ol-a
vi-tic-ul-o′-sa
vi-ti-en′-sis
vi-tif-ol′-ĭ-us
Vi′-tis
vi-tis-a′-na
Vi-tis-I-dæ′-a
vit-tæ-for′-me
Vit-ta′-rĭ-a
vit-ta′-ta
vit-tig′-er-a
Vitt-man′-nĭ-a
Viv-i-a′-nĭ-a
Viv-i-a′-nĭ-ĕ-æ
vi′-vic-ans
vi-vip′-ar-i
vi-vip′-ar-um
Vo-and-zei′-a
Voch-i′-sĭ-a
Voch′-y-a
Voch-y′-sĭ-a
Voch-y-sĭ-a′-cĕ-æ
Vo-gel-ĭ-a′-na
Vo-gel′-ĭ-i
Vo-gel′-li
Vo-hi′-rĭ-a
volg-en′-sis
Vol-ka-mer′-ĭ-a
Volk-man′-nĭ-a
Vol-tai-re-a′-num
vol-u′-bil-is
Vol-uc-el′-la
vol-up′-tum
Vou-a′-pa
Vou′-ay
Voy′-rĭ-a
Vree-land′-i
Vries′-ĭ-a
Vrom′-ĭ-i
vul-ca′-nic-a
vul-ga′-ris
vul-ga′-tum
Vul-ner-a′-rĭ-a
vul-pa′-rĭ-a
Vul′-pi-a
vul-pi′-nus
Vuyl-stek-ĭ-a′-na

Wach-en-dorf′-ĭ-a
Wāg′-en-er-i
Wāg′-en-er-ĭ-a′-na
Wāg′-ner-i*
Wāg-ner-ĭ-a′-num
Wahl-bom′-ĭ-a
Wahl-en-berg′-ĭ-a
Wailes′-ĭ-a
Wailes-ĭ-a′-num
Wait′-zĭ-a
Wake-ley-a′-num
Walck-en-œr′-a
Wald-schmid′-ĭ-a
Wald-stein′-ĭ-a
Wald-stein-ĭ-a′-na
Walk′-er-æ
Walk′-er-i
Walk-er-ĭ-a′-na
Wal-la′-cĕ-i
Wal-lich′-ĭ-a
Wal-lich-ĭ-a′-na
Wal-lich′-ĭ-i
Wal-lis′-ĭ-a
Wal-lis′-ĭ-i
Wall-roth′-ĭ-a
Wal-su′-ra
Wal′-ter-i
Wal-the′-rĭ-a
Wal-u-iew′-i
Wal-u-jew′-i
Wam′-pi
Wan′-ner-i
War-cew-ic′-zĭ-i
War-czew-ic′-zĭ-i
Ward-ĭ-a′-num
Ward′-ĭ-i
Wa-rĕ-a′-na
War-el-lĭ-a′-na
War-ming-ĭ-a′-num
War-ming′-ĭ-i
War′-ner-i
War-ner-ĭ-a′-num
War-ner′-ĭ-i
War-o-que-a′-num
War′-rĕ-a
War-rĕ-a′-na
War-ren′-ĭ-i
War-scew-ic-zel′-la
War-szew-ic-zĭ-a′-na
War-scew-ic′-zĭ-i
War-szew-ic-zel′-la
Wash-ing-to′-nĭ-a

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp*-art′; ā as in ps*ā′*-lmist; ĕ as in sl*ĕu′*-der; ē as in *vē′*-ined; ĭ as in th*ĭn*; ī as in mach-*ī′*-nist; ŏ as in r*ŏt′*-ten; ō as in *vō′*-ter; ŭ as in pow′-er-f*ŭl*; ū as in r*ū′*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ouse*; g, c, and ch, always hard, as, for example, g in *g*ood, c in muscular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Wash-ing-to′-nĭ-a′-num
Wa′-ter-er-i
Wa-ter-ĭ-a′-na
Wat-so′-nĭ-a
Wat′-tĭ-i
Wa-va′-rĭ-a
Waw-ra′-nĕ-a
Weath-er-il′-li
Web-ber-ĭ-a′-na
Web′-bĭ-a
Web-bĭ-a′-na
Web′-bĭ-i
We′-ber-a
We-ber-ĭ-a′-na
Wed-del-ĭ-a′-na
Wed-e′-lĭ-a
Weig-e′-la
Weig-e′-lĭ-a
Weig-e′-lĭ-a′-na
Wein-man′-nĭ-a
Wein-man-nĭ-a′-num
Weir′-ĭ-i
Weis-man′-ni
Wel′-den-i
Welf′-ĭ-a
Wel-ling-to′-nĭ-a
Wel′-ton-i
Wel-ton-ĭ-en′-sis
Wel-wit′-schĭ-a
Wel-wit′-schĭ-i
Wend-land′-ĭ-a
Wend-land-ĭ-a′-na
Wend-land′-ĭ-i
Wen′-sĕ-a
Went-worth′-i
Went-worth-ĭ-a′-num
Wer-ne′-rĭ-a
West-pha-ling′-ĭ-a
West-ring′-ĭ-a
Whip′-plĕ-i
White-head′-ĭ-a
Whi′-tĕ-i
Whit-field′-ĭ-a
Whit-la′-vĭ-a
Whit′-ley-a
Whit′-ley-i
Whit′-ney-i
Whit′-tak-er-i
Whit-ting-ton-en′-sis
Why′-tĕ-i
Wi-borg′-ĭ-a
Wid-dring-to′-nĭ-a
Wiers-beck′-ĭ-i
Wig-and′-ĭ-a
wig-and-ĭ-ŏ-i′-dēs
Wight-ĭ-a′-na
Wight′-ĭ-i
Wik-ström′-ĭ-a
Wilck-ĕ-a′-num
Wil-den-ow′-ĭ-i
Wil-der′-ĭ-i
Wild-ĭ-a′-na
Wiles-ĭ-a′-num
Wil-ford′-ĭ-i
Wilkes-ĭ-a′-na
Will-den-o′-vĭ-a
Will-den-o′-vĭ-i
Will-den-ow′-ĭ-a
Wil-lem-e′-tĭ-a
Will′-iams-i
Will-iams-ĭ-a′-num
Will-iams′-ĭ-i
Will-iams-on′-i
Will-iams-on′-ĭ-i
Will-inck′-ĭ-i
Will-kom′-mĭ-i
Will-sĕ-a′-na
Wil-lug-bæ′-ya
Wil-lugh-bei′-a
Wil-mo-rĕ-a′-na
Wil-son′-i
Wil-son′-ĭ-i
Wind′-sor-i
Winn-ĭ-a′-na
Win′-ter-a
Win-ter-a′-na
Win′-ter-i
Wi-o′-ti
Wis-liz-e′-ni
Wis-ta′-rĭ-a
With-er-ing′-ĭ-a
Wit-se′-nĭ-a
Wit-te-a′-num
Wit-tels-bach′-ĭ-a
Witt-man-nĭ-a′-na
Wolf′-fĭ-a
wol-ga′-ric-a
Wol′-las-ton-i
Wol-las-ton′-ĭ-a
Wol-sten-holm′-æ
Wood-ford′-ĭ-a
Wood-ford′-ĭ-i
Wood′-sĭ-a
Wood′-sĭ-i
Wood-ward′-ĭ-a
Wool-gar-ĭ-a′-na
Wool′-las-ton-i
Worm′-ĭ-a
Worm-ski-old′-ĭ-a
Worm-ski-old′-ĭ-i
Wrang-el-ĭ-a′-na
Wray′-æ
Wray′-i
Wright′-ĭ-a
Wright-ĭ-a′-na
Wright′-ĭ-i
Wrig-ley-a′-na
Wulf′-en-i
Wulf-en′-ĭ-a
Wulf-en-ĭ-a′-na
Wulf′-fĭ-a
Wull-schlæg-el′-ĭ-a
Wurm′-lĕ-a
Würth′-ĭ-a
Wy-at′-tĭ-a′-na
Wy-eth′-ĭ-a

Xal-ap-en′-sis
xanth-ac-an′-tha
xanth′-in-um
Xanth-is′-ma
Xanth′-ĭ-um
xanth-oc′-al-yx
xanth-oc-ar′-pum
Xanth-oc-eph′-a-lum
Xanth-oc′-er-as
Xanth-och-y′-mus
Xanth-oc′-om-a
Xanth-oc-rom′-ŷ-on
xanth-od-ac′-tyl-a
xanth′-od-on
xanth-og-lōs′-sum
xanth-ol-eu′-ca
xanth-oph-leb′-ĭ-um
xanth-oph-thal′-ma
xanth-oph-yl′-lus
Xanth-orh-i′-za
Xanth-or-rhoe′-a
Xanth-o′-si-a
Xanth-os-o′-ma
Xanth-ox′-yl-on
Xanth-ox′-yl-um
Xen-ĭ-a′-trum
Xen-oc-ar′-pus
Xen-oph-on′-ta
Xe-ran′-dra*
Xe-ran′-them-um
Xe-ron-e′-ma
Xe-roph-yl′-lum
Xe-roph′-yt-a
Xe-ro′-tēs
Xim-en-e′-sĭ-a
Xim-en′-ĭ-a
Xiph-id′-ĭ-um*
xiph-ĭ-ŏ-i′-dēs
Xiph′-ĭ-on
Xiph-op′-ter-is
xiph-os′-tach-ys
xu′-tha
xyl-ac-an′-tha*
Xyl-a′-rĭ-a
Xyl-eb′-or-us
Xyl-ob′-ĭ-um
xyl-oc-ar′-pum
Xyl-om-e′-lum
Xyl-oph-yl′-la
xyl-oph-yl-lŏ-i′-dēs
Xyl-o′-pĭ-a
Xyl-op-ic′-ron
Xyl-os′-tĕ-um
xyl-ot′-rich-a
Xyr-id′-ĕ-æ
Xyr′-is
Xys-mal-ob′-ĭ-um
xyt-rĭ-oph′-or-a

Ye-col′-li
yed-o-en′-sis
Young′-i
Young′-ĭ-æ
Young′-ĭ-a′-num
Young′-ĭ-i
Yp-on-om-eu′-ta

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* This word is discussed at the end of the Pronouncing Dictionary.

Pronouncing Dictionary—*continued.*

Yuc'-ca
yuc-cæ-fol'-ĭ-a
yuc-cŏ-i'-dēs

Zab-uc-a'-jo
Zac-in'-tha
Zahn'-ĭ-i
Zal-ac'-ca
Zal-u-za'-nĭ-a
Zal-u-zi-an'-skĭ-a
Za'-mĭ-a*
za-mĭ-æ-fol'-ĭ-um
Za-mĭ-oc-ul'-cas
za-mor-en'-sis
Zan-nich-el'-lĭ-a
Zan-ted-esch'-ĭ-a
Zanth-orh-i'-za
Zanth-ox-yl'-ĕ-æ
Zanth-ox'-yl-um
zan-zib-a-ren'-sis
Zap-a'-nĭ-a
Za'-ra
Za-rab-el'-lĭ-a
Zausch-ner'-ĭ-a
Zav-i-a'-num
Ze'-a
Ze-bri'-na
Zed-o-a'-rĭ-a
Zeh-ner'-ĭ-a
ze-if-ol'-ĭ-a
Ze-nob'-ĭ-a
Zeph-yr-an'-thēs
Ze-rum'-bet
Zeux-i'-na
Zex-me'-nĭ-a
Zey'-her-i
zey-lan'-ic-um
zib-eth-i'-nus
Zi'-chy-a
Zier'-ĭ-a
Zie-te'-nĭ-a
Zig-a-de'-nus
Zil'-la
Zi-mœp-a'-ni
Zing'-ib-er
Zing-ib-er'-ĕ-æ
Zin'-nĭ-a
Zi-zan'-ĭ-a
Ziz'-ĭ-a
Zi-ziph'-or-a
Zi'-zyph-us
Zo-mic-ar'-pa
Zo-mic-ar-pel'-la
zo-na'-le
zo-na'-ta
Zo-og-lœ'-a
Zorn'-ĭ-a
Zo-ste'-ra*
zo-ste-ræ-fol'-ĭ-a
Zo-ste'-rĕ-æ
Zo-ste-ros'-tyl-is
Zoys'-ĭ-i
Zuc-cagn'-ĭ-a
Zuc-car-i-nĭ-a'-na
Zwing'-er-a
Zyg-ad-e'-nus*
Zyg'-is
Zyg-og-lōs'-sum
Zyg-om'-en-ēs
Zyg-om'-er-is
Zyg-op-et'-al-um
Zyg-oph-yl'-lĕ-æ
Zyg-oph-yl'-lum
Zyg-os-ep'-al-um
Zyg-os'-ta-tēs

Words derived from Latin and Greek (*i.e.*, all except those in italics) to be pronounced as follows: ă as in *ăp-art'*: ā as in ps*ā'*-lmist; ĕ as in sl*ĕn'*-der; ē as in v*ē'*-ined; ĭ as in th*ĭn*; ī as in mach-*ī'*-nist; ŏ as in r*ŏt'*-ten; ō as in v*ō'*-ter; ŭ as in pow'-er-f*ŭl*; ū as in r*ū'*-ler; ў as ĭ; ȳ as ī; æ, œ, ei, as *ai* in p*ain*; au as *ou* in h*ouse*; g, c, and ch, always hard, as, for example, g in *g*ood, c in mus*c*ular, and ch in *Ch*ristian. (For the old method, see page 276.)

* This word is discussed at the end of the Pronouncing Dictionary.

The following Notes to the preceding alphabetical list deal, for the most part, with **three classes of words.**

I. Attention is drawn to those names of plants which are most frequently mispronounced in ordinary conversation. It will be as well to guard the reader against the supposition that there exists at present, for botanical names, any recognised standard of pronunciation, from which he may imagine that this Dictionary often presumes to depart. The fact is, that there is no such established standard: in many cases the common text-books are utterly at variance; and the usage, not only of good gardeners, but of educated botanists, is often hopelessly divergent. The aim of the present work, instead of being revolutionary, is eminently conservative, in that it seeks to revive and preserve good old ways that have partially fallen into disuse. At the same time it must be admitted that it is thoroughly radical, inasmuch as it insists on going to the *root* of matters. The combination of these two characteristics would substitute for a capricious anarchy a system of pronunciation founded upon antiquity and rational principles. This is chiefly apparent in two kinds of names.

In words of classical origin the ultimate criterion must be the manner in which such words were pronounced by the ancient Greeks and Romans. If they said, for example, *Anemō'-nē* (*ἀνεμώνη*), we must speak of *Anemō'-nē fulgens* and *Anemō'-nē nemorosa*; since in using these expressions we are simply giving the Latin phrases equivalent to the English "Shining Windflower" and "Wood Windflower." It is necessary, however, to bear in mind that the word "Anemone" has also passed into the English language, and in so doing shifted its accent and changed the sound of its vowels, as in so many similar instances. In this way, one might

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quite correctly speak of "a wood anem′-ŏnĕ," or "anem′-ŏny," as it is sometimes written. The case is quite parallel to the Latin "orātor," which is in English "orător." It would be just as gross a blunder to say "orător" in a Latin quotation, as "orātor" when conversing in English. Mistakes frequently occur from forgetfulness of the simple fact that the generic and specific names of plants are Latin, not English, and are to be carefully distinguished from English words which may happen to be spelt in the same way and mean the same thing. The Latin *Al′-ŏ-ē* (from Greek, *ἀλόη*) in three syllables, and the English *Al′-oe* in two, give a good instance of this; and it may be well to add that *Sisymbrium Soph′-ĭa* is the correct pronunciation, in spite of the fact that the Vicar of Wakefield's lovely daughter was Sophī′-a Primrose. Of course, these remarks refer as well to the modern Latin compounds formed on classic analogy as to the words from the scientific vocabulary of the ancient writers which have survived unaltered in our own—*e.g.*, *anemōnifŏlius* is governed by the analogy of *Anemōne* and *fŏlium;* and must not be called (as it generally is) *anemŏnefōlius,* because we happen to be familiar with the English words "anemŏne" and "fōliage."

Again, in words commemorative of the names of men, it surely is well to pronounce each word as nearly as possible in the way in which the name to be commemorated was sounded. The opposite habit often causes the plant-name to be quite disassociated from the person in whose honour it was given. Mr. Britten ("Catholic Press," i., p. 440) puts this very pleasantly: "We all know something about dahlias and fuchsias, and have so far popularised each name as to mispronounce it; but who has heard of the Swedish botanist Dahl, or the German, Rembert Fuchs, in honour of whom the plants were named? Who thinks of Father Kamel, the Moravian Jesuit traveller of the seventeenth century, when he pins a camellia into his buttonhole? No one, surely, or we shouldn't almost always call it a camee′-lya." A few comments on the three well-known plant-names mentioned in this quotation will bring out the chief points concerning commemorative names which require notice. (*a*) *Dahlia:* In this case, the popular error is all the more unpardonable, as there is another plant, the Dalea (called after Dr. Samuel Dale), which ought to be pronounced exactly as the Dahlia too commonly is. (*b*) *Fuchsia:* Even the most accurate writers may sometimes make a slip—*quandoque bonus dormitat Homerus.* Plumier, the author of this name, associates it with "Leonartus Fuchsius" ("Plant. Americ. Genera," p. 14); Linnæus ("Critica Botanica," p. 92) gives Leonhard as the Christian name; and Hallam ("Literary History," i., p. 471) speaks of "Leonard Fuchs, who has secured a verdant immortality in the well-known Fuchsia." The other Fuchs was *Remacle,* a contemporary of *Rembert* Dodoens; and of him Mr. Boulger ("Natural History Notes," ii., p. 161) makes the Fuchsia commemorative. But if Plumier intended to keep green the memory of Leonhard, it is hardly fair that the honour should be appropriated by Remacle or another. This example shows how hard it is, even for writers well versed in botanical nomenclature, to be perfectly accurate when dealing with this difficult subject; and it may serve to excuse some of the errors which occur in these pages. (*c*) *Camellia:* It will be observed that the plant-name is not Kamelia, although it is called after Kamel. The reason of this is that the generic names are taken in many cases, not directly from the real names of the men after whom they were called, but from a Latinised or Græcised form of these names, which was commonly used at a time when Latin was the ordinary language for almost all scientific and theological works. The

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theologian Melancthon, whose Græcised appellation has almost entirely superseded his true name, Schwartzerd (black earth), is a familiar example. Among botanists, Dodoens becomes Dodonæus, and so fathers the *Dodonæa;* Kamel becomes Camellus, and is remembered (or, according to Mr. Britten, forgotten) in the *Camellia*; Jerome Bock (the he-goat) was considered to have such a hopelessly vulgar name that it was metamorphosed into Hieronymus Tragus, and from him the *Tragia* takes its name. It is strange indeed that so much of Fuchs is preserved in his name (as written, even if not as pronounced), since Fuchs (the fox) would naturally have become Alōpēx (*αλώπηξ*) or Vulpes, and produced *Alopecia* or *Vulpia*—forms which, as it happens, did afterwards occur. In fact, when Cornarius, a rival of Fuchs, published an attack upon him, he gave it the title of *Vulpecula excoriata*, "The foxling flayed." The instances adduced show that in the older names the Latinised form of the personal title was usually taken as the basis of the plant-name; but does it follow that the same operation ought to be performed at the present day, when men are quite content with their everyday patronymics, and never think of clothing them in classic garb? The pronunciation of ordinary modern names in such pedantic fashion often entirely obliterates (in sound) the connection between the man and the plant called after him. Why, for instance, should the modern Englishman, Dr. Stokes, be first transformed into the Roman *Stō-kē-sĭ-us*, and handed down to posterity in the *Stō-kī-sĭ-a*, when his memory would be much more fitly embalmed in the homely *Stokes-ĭ-a*, with three syllables instead of four? The same remark would apply to Mr. Sykes, a plant-collector commemorated by Walker-Arnott in the *Sykesia*. *Colquhoun-ia*, if pronounced as the proper name is in ordinary speech, is easy enough; but one trembles at the terrible combination which has to be uttered if it is supposed to have passed through a Latin stage, and each vowel must be assigned a separate value. The principle of preserving as much as possible the original sounds of proper names has been kept in view in the construction of this Pronouncing Dictionary. It has often given much difficulty in application, and led perhaps to inconsistent results; but it was felt that if "a verdant immortality" were to be conferred upon Dahl and Fuchs, there was no reason why it should be withheld from Sykes and Stokes. Besides *Sykesia*, *Stokesia*, and *Colquhounia*, other examples occur in the Notes, such as *Abelia*, *Aitonia*, *Listera*, and *Stanleya*.

II. Anyone who has run his eye down a botanical index, or even a garden catalogue, must have noticed what a very large proportion of the names are compounded from a few frequently recurring roots. It has been thought well to give a list of these Root-words, with examples appended. By a careful examination of this list, it will be possible for a person who has no acquaintance with Latin or Greek to pronounce correctly most of the names of classical derivation which he encounters, without having recourse to a Dictionary; since the same root often appears in a very large number of derivations, and when its sound has once been accurately ascertained, there can be no difficulty with the words of which it forms part. See, for example, in this Dictionary, the frequent repetition of the Prefixes călo-, chrȳso-, ĕrĭo-, măcro-, and the Suffixes -lĕpis, -lōma, -nēma, &c. Only those root-words have been given in the list which are likely to be mispronounced. There are, for instance, a large number of words beginning in crypto- and ending in -antha; but it is not probable that

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any one would in such cases vary from the correct pronunciation. References in the notes to the Greek root-words run as follows: "AC-ANTH-OC′-OM-A. *See* Cŏmē (hair)."

III. A few of the slips made in passing the sheets through the press have been corrected. In a work of this kind, for which so many references have to be made, and in which the result of considerable research is often expressed merely by altering the place of a single letter, it is impossible that errors difficult of detection should not creep in; especially as the task had to be done in the greatest haste Indeed three times the period occupied would not have been too much, in which to carry out the design with the care and industry required for such an undertaking. The derivation of nearly fifteen thousand words had to be ascertained, where possible, in order to fix their pronunciation; and though that of the majority was obvious enough, occasionally a single word would require an amount of investigation entirely incommensurate with the apparent result. Since the Publisher was most anxious to keep faith with the public as to the date on which the parts should appear, each sheet, as soon as ever it was finished, was hastily carried off by the printers to be stereotyped, while it still would have much benefited by further revision. Doubtless some errors still remain; but it is hoped that they are not of sufficient importance to interfere with the value of the work as a standard of reference.

AB-A′-MA. One of the very puzzling names given by Michel Adanson; they are generally quite meaningless. *Ab-a′-ma* is given in ordinary type as a word of classical derivation, because it has been referred to *a* (ἀ) not, and *bāma* (βᾶμα) food (so also *Fedia*, which *see*, below); but most of Adanson's names will be found in italics, as barbarous, *e.g.*, *Tolpis* and *Vilfa*.

AB-EL′-Ĭ-A. Very frequently pronounced *Ab-e′-lĭ-a*; but, as it is called after Dr. Clarke Abel, the pronunciation given much more nearly represents the sound of the name which ought to be embodied in it.

AB-ROT′-AN-IF-OL′-Ĭ-UM. The termination *-folium* is by many persons sounded *fo′-lĭ-um*, although the Latin word for a leaf is *fol′-ĭ-um*.

AB-ROT′-AN-Ŏ-I′-DĒS. *-oides* at the end of botanical names is very commonly pronounced "oydes," in two syllables—a gross mistake, as it is merely a reproduction of the Greek *ŏ-ī-dēs* (οειδης). *See* Ĕĭdŏs or īdŏs (appearance). The termination *ēs* (ης) in an adjective (specific name) becomes *ĕs* (ες) when the substantive (generic name), with which it agrees, is neuter.

AC-ANTH-OC′-OM-A. *See* Cŏmē (hair).

AC-ANTH-O′-DĒS. The termination *-ōdes* (ωδης) is a contraction of *ŏ-ī-dēs*, which has been dealt with under abrotanoides, above.

AC-ANTH-OL-I′-MŌN. *See* Leimōn or līmōn, līmōnŏs (a meadow).

AC-ANTH-ORH-I′-ZA. *See* Rhīza (a root).

AC-ANTH-OST-ACH′-Y-UM. *See* Stăchÿs, stăchyŏs (an ear of corn).

AC-EPH′-AL-A. *See* Cĕphălē (a head).

AC′-ER. *Acer*, a Maple, has the *a* short—*Ăcer*; but in *acer*, sharp, pointed, the *a* is long—*ācer*. (*Compare* a′-crĕ, below.) Hence the old memorial line: "*Est ăcer in sylvis, equus ācer Olympia vincit.*"

AC-IN-E′-TA. *Read* Ac-i-ne′-ta (ἀκίνητος, unmoved).

AC-IN-O′-TUS. *See* Ăcĭs (a point) and Nōtŏs (a back).

AC-IPH-YL′-LA. Words ending in *-phyllus, a, um*, are to be carefully distinguished in pronunciation from those in *-philus, a, um*: the former are always to be accented on the last syllable but one, as *ac-iph-yl′-la*, the latter on the last syllable but two, as *Æg-iph′-il-a*.

AC-IS-AN-THE′-RA. *See* Anthera (an anther).

AC-ON-Ĭ-OP′-TER-IS. *See* Ptĕrĭs, ptĕrĭdŏs (a fern).

A′-CRE. The *a* long for *ācer*, sharp, pointed. *See* Ac′-er, above.

AC-ROC′-LAD-ON. *See* Clădŏs (a branch).

AC-ROC-LI′-NĬ-UM. *See* Clīnē (a couch).

AC-ROP-E′-RA. *See* Pēră (a wallet).

AC-ROPH′-OR-US. *See* Phŏrŏs (bearing, producing).

AC-ROS′-TICH-UM. *See* Stĭchŏs (a row, line).

AC-ROT′-RICH-E. *See* Thrix, trĭchŏs (hair).

AC′-TI-NOL′-EP-IS. *See* Lĕpĭs, lĕpĭdŏs (a scale).

AC′-TI-NOM′-ER-IS. *See* Mĕrĭs, mĕrĭdŏs (a part).

AC-TI′-NON-E′-MA. *See* Nēmă, nēmătŏs (a thread).

AC-U′-TIF-LO′-RA. The termination *-florus, a, um* (from *flos, flōris*, a flower), ought to have the *o* always long; although it is given as *-flŏrus* by the same class of authorities which advocate the pronunciation *-fōlius*. *See* abrotanifolium, above.

AC-U-TIL′-OB-A. *See* Lŏbŏs (a lobe).

AD-E′-LOB-OT′-RYS. *See* Bŏtrÿs, bŏtrÿos (a cluster).

A-DEN′-Ĭ-UM. From Aden in Arabia, hence with the *a* long, and so distinguished from the compounds of *ădēn* (ἀδήν), a gland.

AD-E-NOP-OD′-Ĭ-A. The compounds of *ădēn, ădĕnŏs* (ἀδήν, ἀδένος), a gland, have been given throughout this Pronouncing Dictionary with the *e* long, in accordance with general usage; but it would be more correct to pronounce the *e* short, as the stem is *ădĕn*, as seen in ἀδένος.

AD-E-NOST′-OM-A. *See* Stŏmă, stŏmătŏs (the mouth).

ÆG-IPH′-IL-A. *See* Phĭlŏs (fond); and *compare* Aciphylla, above.

AG-A′-VE. Often mispronounced as a dissyllable *Ag-ave*; but it has three syllables, as the equivalent of the Greek *ag-au-e* (ἀγαυή), illustrious.

AG-E′-RAT-UM. Most people talk of an "Aj-er-ay′-tum," but the word is the Greek *Agērăton* (ἀγήρατον).

AG-ROP-Y′-RUM. *See* Pÿrŏs (Wheat).

AG-RO′-STIS. The *o* is long, as the word is a reproduction of the Greek *Agrōstis* (ἄγρωστις).

AI-TO′-NĬ-A. The *o* would perhaps be better short, as coming from Aitŏn. *See* discussion on preceding page.

A-I-ZO′-ON. This word has four syllables, since it is a compound of the Greek *a-ī* or *a-ei* (ἀεί), always, and *zō-os* (ζωός), living.

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AJ-U′-GA. Given by Lindley and others as *Aj′-uj-a*: but the old Latin word is *Aj-u′-ga*. *See* White and Riddle, also Lewis and Short, *sub voc.*

AL-BO-SPI′-CA. The Latin word *spīca*, a spike, an ear of corn, frequently recurs in botanical names.

AL-BO-STI′-PES. From the Latin word *stīpes*, *stīpitis*, a trunk. *stipitatum* has the same derivation.

AL-EC-TOR-OL′-OPH-US. *See* Lōphŏs (a crest).

ALL-OS-O′-RUS. *See* Sōrŏs (a heap).

AL′-Ŏ-E. The word comes from the Greek *Al-ŏ-ĕ* (ἀλόη); so that each of the three syllables is to be pronounced distinctly, not as in the English aloe, which has only two syllables. *See* p. 347.

AM-BLY′-OD-ON. *See* Ŏdous, ŏdŏntŏs (a tooth).

AM-MOB′-Ĭ-UM. *See* Bĭŏs (life).

AM-MOCH′-AR-IS. *See* Chărĭs, chărĭtŏs (grace, beauty).

AM-MOG-E′-TON. *See* Geitōn or gētōn (a neighbour).

AM-PHIL-OB′-Ĭ-UM. *See* Lŏbŏs (a lobe).

AM-PHOS-TE′-MŌN. *See* Stēmōn, stēmŏnŏs (the warp, a stamen).

AN-CYC LOG′-YN-E. *See* Gynē (a woman).

AN-DROP-O′-GŌN. *See* Pōgōn, pōgōnŏs (a beard).

AN-DROS′-AC-E. The termination *săc-e*, from Greek *săcŏs* (σάκος), a shield, should not be pronounced like the English "sake," as it sometimes is.

AN-DROS-TEPH′-Ĭ-UM. *See* Stĕphŏs (a crown).

AN-E′-MĬ-A. This word, coming from the Greek *aneimōn* (ἀνειμών), naked, has the *e* long: so that, with its compounds, it is to be distinguished from *Anĕmōne*, and the compounds of that word.

AN-EM-O′-NE. In Greek Anĕmōnē (ἀνεμώνη). *See* p. 346.

AN-IS-ANTH′-US. From *anīsŏs* (ἄνισος), unequal, to be distinguished from *anīsŏn* (ἄνισον), Anise, which appears in *Anīsum* and *anīsata*.

AN-IS-OG-O′-NĬ-UM. *See* Gōnĭa (an angle).

AN-I′-SUM. From the Greek *Anīsŏn* (ἄνισον), Anise. *Compare* Anisanthus, above.

AN-œC′-TOCH-I′-LUS. *See* Cheilŏs, or chīlŏs (a lip).

AN-OM-ATH-E′-CA. *See* Thēcē (a case, sheath)

AN-OP-LOPH′-YT-UM. *See* Phytŏn (a plant).

ANTH′-EM-IS. The Greek *Anthĕmis* (ἀνθεμίς), and therefore not to be pronounced "An-thee-mis," as given in a treatise on plant-names.

ANTH-OL-O′-MA. *See* Lōmă, lōmătŏs (a border, fringe).

AN-TIG-O′-NON. Endlicher's *Antigonon* is the same as A. Jussieu's *Antigonium*, from *gōnĭa* (γωνία), an angle.

AP′-Ĭ-UM. The first syllable is short, though very frequently pronounced long. The correct quantity is shown in the line of Horace: "*Neu vivax ăpium, neu breve lĭlium.*"

AP-OC′-YN-UM. *See* Cynō, cynŏs (a dog).

AR′-AB-IS. The medial *a* is short, and is generally pronounced so, in spite of the "Ar-ray-bis" given in one book on plant-names.

AR-A-NIF′-ER-A. The very frequently recurring Latin termination *-fera*, bearing or producing, has the *e* short. *Compare* Phŏrŏs (φορός).

AR′-BUT-US. Very often mispronounced *Arbūtus*; but the *u* is certainly short, as in Virgil's line, "*Dulce satis humor, depulsis arbŭtus hædis.*"

ARC-TOS-TAPH′-YL-OS. *See* Stăphylē (a cluster of grapes).

AR-GEM-O′-NE. Not *Argemŏne*, but *Argemōne* (ἀργεμώνη), the name used by Dioscorides.

AR-GOS′-PATH-A. *See* Spathē (a blade, flower-sheath).

AR-IS′-TOL-OCH′-Ĭ-A. Although this word is often pronounced *Aristolōchia*, the last *o* is short, as it comes from the Greek *Aristŏlŏchia* (ἀριστολοχία).

AR-IST-OT′-EL-A. Not *Aristotēla*, as often given, since it comes from the Greek *Aristŏtĕlēs* (Αριστοτέλης), Aristotle.

AR-O-NI′-CUM. Altered from *Doronicum* (which *see*), therefore with the *o* and *i* long.

ARTH-ROP-OD′-Ĭ-UM. This word and those of similar termination should not be pronounced as if they ended in *-poe-di-um*, but *-pŏdium*. *See* Pous or pūs, pŏdŏs (a foot).

AR-VIC′-OL-A. The Latin termination *-cola*, an inhabitant, has the *o* short, as in *Viti-cola*, *Eremi-cola*.

AS-CAR-IC′-ID-A. This word and *An-guic′-id-a* ought to have been given as *As-car-ic-i′-da* and *An-guic-i′-da*, as the Latin termination *-cida*, a slayer, has the *i* long, *e.g.*, *homicīda*.

AS-COM-YC-E′-TĒS. *See* Mycēs, mycētŏs (a mushroom).

AS-PHOD′-EL-US. Often mispronounced *Asphodēlus*; it comes from the Greek *Asphŏdĕlŏs* (ἀσφόδελος).

AS′-TĔR. *Delete* the long mark over the *e*. The word is the Greek *Astēr* (ἀστήρ); but in Latin it becomes *Aster*, with the *e* doubtful.

AS-TROC-AR′-Y-UM. *See* Cărўŏn (a nut, fruit-stone).

AS-TROL-OB′-Ĭ-UM. *See* Lŏbŏs (a lobe).

AS-TROPH′-YT-UM. *See* Phytŏn (a plant).

ATH-E-RU′-RUS. *See* Oura or ūra (the tail).

AU′-CUB-A. Wittstein and Glaser give *Aucūba*, which seems to be the sound expressed in the "Cuba" of many gardeners; but Lindley (in Paxton) gives *Aucŭba*, as the word is now generally pronounced.

AZ-AL′-Ĕ-A. Although generally pronounced *Azālea* the medial *a* is short, as coming from the Greek *Azălĕŏs* (ἀζαλέος), dry. Lindley gives it correctly.

BEL-OP-ER′-ON-E. *See* Bĕlŏs (a dart).

BĬ′-OT-A. From the Greek *Biŏtē* (βιοτή), life, and given with the *o* short by Glaser, &c.; but generally pronounced *Biōta*.

BLEPH′-AR-IG-LŌT-TIS. *See* Blĕphărĭs (an eyelash).

BRACH-YCH-I′-TON. *See* Brăchys (short) *and* Chĭtōn, chĭtōnŏs (a tunic).

BRACH-YS-E′-MA. *See* Brăchys (short) *also* Sēma and Sēmeiŏn (a mark).

BRACH-YS′-PATH-A. *See* Brăchys (short) *and* Spathē, (a blade, flower-sheath).

BREV-IS-CA′-PA. The Latin word from which the termination is derived is *scāpus*, a trunk, the same as the Greek *scāpŏs* (σκᾶπος).

BREV-IS-E′-TA. The Latin *seta*, a bristle, has the *e* long, as in *sētacea*, *sētigera*, *sētosa*, &c.

BROM′-US. The Greek name of this Grass is Brŏmŏs (βρόμος); but the generic name is often pronounced *Brōmus*, as if from *brōma* (βρῶμα), food.

BRŸ′-A. *Read Bry′-a*—the first syllable long—as a name commemorative of De Bry, and therefore to be pronounced differently from *Brўanthus*, &c., from the Greek *brўo* (βρύω), I grow.

BU-GLŌS′-SUM. *See* Būs (an ox, a bull) *and* Glōssa (a tongue).

BUL-BOS′-TYL-IS. *See* Stўlŏs (a pillar, style), and *compare* the note on Stylandra, below.

BU′-TOM-US *See* Būs (an ox, a bull) *and* Tŏmē (a cut).

CAL′-Ĕ-A. *See* Călŏs (beautiful).

CA-LE-A′-NA. To be distinguished from *Călea*. The first *a* is long, as the word is derived from the proper name Caley.

CAL-IPH-RU′-RĬ-A. The *u* is long as the word is derived from *phrūra* (φρουρά), a guard.

CAL-LICH′-RŎ-A. *See* Chrŏă (colour).

CAL-LIP-RO′-RA. The *o* long, from *prōra* (πρῶρα), a prow.

CAL-LIP-SY′-CHE. *See* Psychē (the soul, a butterfly).

CAL-LIS-TEM′-MA. *See* Stemma, stĕmmătŏs (a wreath).

CAL-LIS-TE′-MŌN. Words derived from Stēma and Stēmōn (a stamen) are to be distinguished from those derived from Stĕmma. *Compare* Callistemma, above.

CAL-OD-IC′-TŸ-ON. *See* Dictўŏn (a net).

CAL-OD′-RAC-ON. *See* Drăcōn, drăcŏntŏs (a dragon).

CAL-OG-LŌS′-SA. *See* Glōssa (a tongue).

CAL-OPH′-AC-A. The *a* short, from *phăcē* (φακῆ), a lentil; not *phāca*, as given by McNicoll and Glaser.

CAL-YC-OT′-OM-E. *See* Călўx, călўcŏs (a covering, calyx), *and* Tŏmē (a cut).

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CAL-YP-TROC′-AL-ĬX. *See* Călyx, călycŏs (a covering, calyx).

CAL-YP-TRON′-OM-A. *See* Călyptra (a veil).

CAL-YS-TEG′-Ĭ-A. *See* Stĕgē (a covering).

CAL-YX′-HY-MEN′-Ĭ-A. *See* Hymēn, hymĕnŏs (marriage).

CAM-EL′-LĬ-A. A word subject, in the matter of pronunciation, to very hard usage, which sometimes goes so far as to give it the sound of "Camilla." It is fully discussed on pp. 347-8.

CAM-E-LO′-RUM. The long *e*, which is often wrongly introduced into *Camellia*, properly belongs to this word, from Latin *camelus* (Greek *kámēlos*), a camel.

CAP-ROX′-YL-ON. *See* Xylŏn (wood).

CAR-PI′-NUS. The *i* ought not to be pronounced short, as it often is.

CAS-SUM-U′-NAR. This word should be italicised.

CAS-TAN′-Ĕ-A. The medial *a* short, from Greek *Castăna*, (*kástana*); yet the pronunciation is given in one book as "Kas-tay-nē-ah."

CED′-RUS. The *e* better short, from the Greek *Cĕdrŏs* (*kédros*), although in Latin the quantity of the vowel is doubtful.

CE-LAS′-TRUS. The *e* long, from the Greek *Cēlastros* (*kēlastros*).

CE-LO′-SĬ-A. Long *e*, from the Greek *cēleos* (*kēleos*), dry, burned.

CEPH-AL-AN-THE′-RA. *See* Anthēra (an anther).

CER-AT′-Ĭ-OL-A. The *o* is short, as the word is a diminutive from *Ceratia*. *Compare* Gladiolus, below.

CER-AT-OD-AC′-TYL-IS. *See* Cĕrăs, cĕrătŏs (a horn), *and* Dactylŏs (a finger).

CER-COS′-POR-A. *See* Spŏră (a seed).

CE′-RĔ-US. A Latin word of three syllables, meaning waxen; often pronounced "Sear-use," in two syllables.

CHAM-Æ-BAT′-I-A. *See* Chămæ (on the ground, dwarf).

CHEIL-ANTH′-ĒS. *See* Cheilŏs or chīlŏs (a lip). *Compare also* Chilognatha, below, for the other form of the prefix.

CHEIR-ANTH′-US. *See* Cheir or chīr, chīrŏs (a hand), and *compare* Chiromyces, below, for the other form of the prefix.

CHEIR-OG-LŌS′-SA. *See* Glōssa (a tongue).

CHEL-I-DON′-Ĭ-UM. The Greek word for this plant is *Chelīdŏnion* (*chelidónion*), from *chelīdōn, chelīdŏnŏs* (*chelidṓn, chelidónos*), a swallow.

CHEL-O′-NE. The Greek *chĕlōnē* (*chelṓnē*), a tortoise.

CHE-NOP-OD′-Ĭ-UM. From *chēn* (*chḗn*), a goose, and *Pous, pŏdŏs* (a foot), which *see*.

CHIL-EN′-SE. The *ch* to be pronounced soft, and the *i* short (from *Chili*), and so distinguished from *chil*, with hard *ch* and long *i*, in classical compounds.

CHIL-Ĭ-AN′-DRA. *Read* Chi-lĭ-an′-dra; *also* Chi′-lĭ-oph-yl′-lum. The words come from *Chīlioi* (*chílioi*), a thousand.

CHIL-O′-DĬ-A. *Read* Chi-lo′-dĭ-a. Same derivation as

CHI′-LOG-NATH′-A. *See* Cheilŏs or chīlŏs (a lip).

CHIM′-Æ-RA. *Chimæra* (*chímaira*), a she-goat, has the first syllable short, and so is to be distinguished from the compounds of *chima*, such as the word which follows.

CHI-MAPH′-IL-A. *See* Cheima or chīma, chīmătŏs (cold, winter).

CHI-MON-ANTH′-US. *Read* Chi-mo-nanth′-us, as it comes from *chīmōn, chīmōnos* (*chĕimṓn, cheimṓnos*), winter.

CHĬ-O-NANTH′-US. *Read* Chĭ-on-anth′-us. *See* Chĭōn, chĭŏnŏs (snow).

CHI-ROM′-YC-ĒS. *See* Cheir or chīr, chīrŏs (a hand), *and* Mycēs, mycētŏs (a mushroom).

CHIT-O′-NĬ-A. *See* Chĭtōn, chĭtōnŏs (a tunic).

CHLAM-YD′-Ĭ-A. *See* Chlămys, chlămydŏs (a cloak).

CHLŌ-ANTH′-ĒS. *See* Chlŏă (grass).

CHLO′-RA. *See* Chlōrŏs (green).

CHRO-MAT-EL′-LA. *See* Chrōmă, chrōmătŏs (colour).

CHRY-SANTH′-EM-UM. *See* Chrysŏs (gold) *and* Anthĕmŏn (a flower).

CHRY-SOB-AL′-AN-US. *See* Bălănŏs (an acorn).

Pronouncing Dictionary—*continued.*

CHRY-SOG′-ON-UM. *See* Gŏnŏs (offspring).

CHRY-SOM′-EL-AS. *See* Mĕlăs, mĕlănŏs (black).

CHRY-SOS-TEPH′-AN-A. *See* Stĕphŏs and Stĕphănē (a crown).

CIL-Ĭ-A′-RĬ-A. From the Latin *cĭlium*, an eyelash.

CLAD′-Ĭ-US. *See* Clădŏs (a branch).

CLE′-MAT-IS. Often called *Clem-a′-tis*, sometimes *Clem′-at-is*; but the true pronunciation is plainly that given here, since the word is the Greek *Clēmătis* (*klēmatís*).

CLI-NOP-OD′-Ĭ-UM. The Greek word is *Clīnŏpŏdĭon* (*klinopódion*). *See* Clīnē (a couch) *and* Pous or pūs, pŏdŏs (a foot).

CNE-MI′-DĬ-A. From *cnēmis, cnēmīdos* (*knēmís, knēmîdos*), a legging. *See* Cnēmē (the leg).

CNI′-DĬ-UM. From *Cnīdē* (*knídē*), a Nettle. *Compare* Eu-cni′-de, below.

CO-DO′-NĬ-UM. *See* Cōdōn, cōdōnŏs (a bell).

COL′-Ĕ-US. A word of three syllables (the first short), from the Greek *coleos* (*koleós*), a sheath—not to be pronounced, as it often is, "Coal-use."

COLQU-HOUN′-Ĭ-A. The name Colquhoun is pronounced "Cohoon." This word is discussed on p. 348.

CO-NAN′-DRON. *See* Cōnŏs (a cone).

CO-NI′-UM. From the Greek *Cōnion* or *Cōneion* (*kṓneion*), Hemlock.

COR-YN-OC-AR′-PUS. *See* Cŏrynē (a club).

CRAS-PED-A′-RĬ-A. From the Greek *craspedon* (*kráspedon*), a fringe.

CRE′-PIS. The *e* is long, as the word is the same as the Greek *crēpis* (*krēpís*), a boot. The Greek stem is *crēpīd* (*krēpîd*); but in Latin the quantity of both syllables is changed, and we have *crĕpĭda*, a slipper.

CRI-NIF′-ER-A. This, and the two words which follow on p. 293, come from the Latin *crīnis*, hair, and are distinguished by the length of the first syllable from the compounds of *Crĭnon*.

CRIN-OD-EN′-DRON. From *Crĭnŏn* (*krínon*), a Lily.

CROC′-US. The Latin *Crŏcus* of Virgil: "*Et glaucas salices, casiamque, crŏcumque rubentem.*" The Greek *Crŏcŏs* (*krókos*) of Homer: "*Λωτόν θ' ἑρσήεντα ἰδὲ κρόκον ἠδ' ὑάκινθον.*"

CROT′-ŌN. The Greek *crŏtōn* (*krotṓn*), a tick.

CRUC-Ĭ-AN-EL′-LA. This and other compounds of *crux, crŭcis*, have the *u* short.

CRYP-TOC′-OP-IS. The second part of the compound is the Greek *cŏpis* (*kopís*), a knife.

CUS-CU′-TA. The authorities are much divided as to the pronunciation of this word; but the *Cuscūta* of Alcock, Glaser, and "Index to English Botany," seems nearer to the Arabic *chasuth* or *kechout* than the *Cuscŭta* of many others.

CY′-AM-US. The Greek *cyamos* (*kúamos*), a bean. *Compare* Hyoscyamus, below.

CY-AN′-US. *See* Cyănŏs (dark blue).

CY-ATH′-Ĕ-A. *See* Cyăthŏs (a cup).

CY′-CLAM-EN. The quantity of the *y* in the Greek *cyclos* (*kúklos*), a circle, is doubtful; so that the common gardener's abbreviation "Sykes," for Cyclamens, has just as much authority as the "Sickly-men" of others.

CYN-ANCH′-IC-A. *See* Cyŏn, cynŏs (a dog).

CYN-OC′-TON-UM. *See* Ctŏnŏs (a murder).

CYP-E′-RUS. Often pronounced *Cyprŭs*, which has the authority of the form given by Herodotus, *Cypĕros* (*kuperos*), but more correctly *Cyprus*, from the ordinary form *Cypeiros* (*kúpeiros*).

CY′-PHĬ-A. *See* Cyphŏs (bent, round).

CYP-RIP-ED′-Ĭ-UM. Pronounced by most people *Cypri-pĕdium*; but the termination coming from the Greek *pĕdĭŏn* (*pedíon*) or *pŏdĭŏn* (*pódion*), the *e* ought to be short.

DAC′-TYL-IC-AP′-NOS. *See* Dactylŏs (a finger).

DAH′-LĬ-A. This word ought to have the first syllable sounded like the English "ah," not as "day," since it is commemorative of Dahl. *See* p. 347.

Pronouncing Dictionary—*continued.*

DA′-LĔ-A. The *a* to be pronounced as in "day," as the genus is called after Dr. Samuel Dale. *See* p. 347.

DA′-NĂ-A. This word, called after Dana, has the first syllable long; but *Dan′-ă-ĕ*, after the Greek heroine of that name, has the same syllable short.

DAS-Ŷ-ANTH′-A. *See* Dăsŷs (thick, hairy).

DEC-AB-EL′-ON-E. *See* Dĕcă (ten).

DEC-US-SA′-TA. The first syllable is short, as containing the stem of *decem*; while the neighbouring words *decumbens*, *decurrens*, &c., have the same syllable long, since it is formed from the preposition *de*.

DEL-PHI′-NĬ-UM. The Greek *Delphīnĭon* (Δελφίνιον), from *delphis*, *delphīnos* (δελφίς, δελφῖνος), a dolphin.

DEN-DROM-E′-CŌN. *See* Mēcōn, mēcōnŏs (a poppy).

DICH-Æ′-A. *See* Dĭchă (in two, asunder).

DIC-LYT′-RA. In reality a misprint for *Dicentra*; but it is best pronounced after the analogy of *Dielytra*, a guess-etymology, which is generally substituted for it.

DIC-TŶ-OG-RAM′-ME. *See* Dictyŏn (a net.)

DID-YM-OC-AR′-PUS. *See* Dĭdўmŏs (twin).

DI-EL-YT′-RA. From *ĕlўtron* (ἔλυτρον), a sheath. *See* Diclytra, above.

DIG-IT-A′-LIS. From the frequently recurring *dĭgĭtus*, with the same meaning as the Greek *dactylos*.

DI-OS′-PYR-OS, of Pliny, a rendering of the Greek *διόσπυρος* of Theophrastus, is given in the dictionaries *Diospўros*; but *see* Pўrŏs (Wheat), and *compare* Agropyrum, above.

DIPH-Y′-SA. *See* Phўsa (a bladder, bellows). Lindley (in Paxton) incorrectly gives it as *Diphўsa*.

DIS-AR′-REN-UM. *See* Arrhēn, arrhĕnŏs or arrĕnŏs (a male).

DO-DEC-AN′-DRA. From *dōdĕca* (δώδεκα), twelve. *See* Dĕcă (ten).

DOL-ICH-OC-EN′-TRA. *See* Dŏlĭchŏs (long).

DO-RO-NI′-CUM. The word comes from the Arabic *doronigi*; but Linnæus gives the pronunciation by deriving it from *dōron* (δῶρον), a gift, and *nīce* (νίκη), victory. Glaser and others give it *Doronĭcum*; Lindley rightly makes the *i* long.

DOR-Ŷ-ANTH′-ĒS. From *dŏrў* (δόρυ), a spear.

DRAC′-O. *See* Drăcōn, drăcŏntŏs (a dragon).

DREP-AN-OC-AR′-PUS. From *drĕpănē* (δρεπάνη), a sickle.

DRI′-MĬ-A. From *drīmўs* (δριμυς), sharp, keen.

DRU-PA′-CĔ-A. This and the three following words on p. 297 from the Latin *drūpa*, a kind of fruit.

DRŶ-OB-AL′-AN-ŌPS. *See* Drўs, drўŏs (an oak).

ECH-I-NANTH′-US. *See* Ĕchīnos (a hedgehog).

ECH-Ĭ-O-GLŌS′-SUM. The *o* in *echĭŏ-* ought to be short. *See* Ĕchĭs, ĕchĭŏs (a viper, an adder).

EL-AT-I′-NĒS. From the Greek *Ĕlătine* (ἐλατίνη).

E-LA′-TĬ-OR. The Latin *ēlātus*, lofty; note the difference from the preceding in the first two syllables.

ER-E′-MĬ-A. *See* Ĕrēmŏs (desert, solitary).

ER′-I-A. *See* Ĕrĭŏn (wool).

ER-I′-CA. Generally pronounced *Erĭca*; but it ought certainly to have the second syllable long, as it comes from the Greek *Ĕrīcē*, or *Ĕreicē* (ἐρείκη).

E-RIG′-ER-ŌN. The Greek *Ērĭgĕrōn* (ἠριγέρων), from *ēri* (ἦρι), early, and *gĕrōn* (γέρων), old.

E-RIN-A′-CĔ-A. The Latin *ērĭnaceus*, a hedgehog. To be distinguished from the next by the quantity of its first two syllables.

ER-I′-NĔ-UM. From *Ĕrīneos* (ἐρινεός), a wild Fig-tree.

ER-YS-I′-PHE. *Compare* Er-is-y′-phe: both words are forms of the Greek *ĕrўsībe* (ἐρυσίβη), mildew.

ER-YTH-ROR′-ACH-IS. *See* Ĕrўthrŏs (red).

EU-CHRO′-MA. *See* Chrōmă, chrōmătŏs (colour).

EU-CNI′-DE. From *Cnīdē* (κνίδη), a Nettle. *Compare* Cni′-dĭ-um.

EU-O′-NYM-US. The Greek *euōnўmŏs* (εὐώνυμος), lucky.

EU-PHLEB′-Ĭ-A. *See* Phlĕps, phlĕbŏs (a vein).

EU′-SCAPH-IS. *See* Scăphē or Scăphis (a boat, skiff).

Pronouncing Dictionary—*continued.*

EX-O-GON′-Ĭ-UM. The *o* short, in accordance with the derivation from *gŏnŏs* (γόνος), begetting; not as *Anisogōnium*, from Gōnĭa (an angle), which *see*.

FE′-DĬ-A. One of Adanson's names (*see* note on Abama, above). The present word has been supposed to come from *fēdus*, an old form of the Latin *hœdus*, a kid.

FIL′-IC-ĒS. The compounds of *fĭlix*, *fĭlĭcis*, a fern, are to be distinguished from those of *fīlum*, a thread.

FI-LIF-OL′-Ĭ-UM. The first syllable long, as the word means "thread-leaved," to be distinguished from *fĭlicifolia*, fern-leaved.

FLA-BEL-LA′-TA. From *flābellum*, a fan.

FLAG-EL-LA′-RIS. The first syllable is short, from *flăgellum*, a whip.

FLA′-VA. This and several words following have the first syllable long, coming from *flāvus*, yellow.

FLO′-RID-A. The Latin *flōrĭdus*, blooming, from *flos*, *flōris*. *See* note on acutiflora, above.

FLOR-ID-A′-NUM. The first syllable not to be pronounced as in *flo′-ri-da*, since this word is derived from Florida, one of the United States.

FOL′-Ĭ-I. *See* note on abrotanifolium, above.

FRA-GA′-RĬ-A. From the Latin *frāga*, a strawberry. akin to *frāgrans*.

FROL-O′-RĬ-A. Delete: a misprint for the following word, *Froloria*.

FRUT-ES′-CA. The first syllable in this and the five words which follow on p. 301 is short, though often pronounced long—*frŭtex*, not *frūtex*, &c.

FUCH′-SĬ-A. See p. 347. The part of the word in italics ought to be pronounced like the German word *fuchs*, a fox. Those to whom this does not convey much information may sound the word rather as "Fook′-sĭ-a" than "Few-shah," as we generally hear it. The evil effect of the mispronunciation is seen in the very frequent mis-spelling of the word. Nine times out of ten, people write it *Fuschia*, and compositors frequently set it up in the same way.

FU-SIF-OR′-MIS. The first syllable long, from the Latin *fūsus*, a spindle.

GAL-AC′-TĬ-A. *See* Gălă, gălactŏs (milk).

GAL-E′-DUP-A. This word should be italicised.

GAL-PHI′-MĬ-A. An anagram of *Mal-pi′-ghĭ-a*, and to be pronounced in a similar way.

GEM-IN-A′-TA. From Latin *gĕmĭnus*, with the same meaning as Greek *dĭdўmŏs* (twin).

GER-AN′-Ĭ-UM. The second syllable is short. The Greek is *Gĕrănĭon* (γεράνιον), from *gĕrănŏs* (γέρανος), a crane.

GER-OP-O′-GŌN. From *gĕrōn gĕrŏntŏs* (γέρων, γεροντος), an old man, and Pōgōn (a beard), which *see*.

GES-NE′-RA. So Lindley, Wittstein, Glaser, Lennis, &c. The word is frequently pronounced *Gesnĕra*.

GLAB-EL′-LA. The first syllable short, from Latin *glăber* (bald).

GLAD′-Ĭ-OL-US. This word used to be pronounced *Glad-ĭ-o′-lus*; lately the "fashionable" pronunciation has been *Glad-ī′-ol-us*, which is quite as incorrect as the former. *Glad′-ĭ-ol-us* is the Latin name used by Pliny, and is a regularly formed diminutive from *gladius* (a sword).

GLŌS-SAN′-THUS. *See* Glōssa (a tongue).

GLYC-YR-RHI′-ZA. *See* Glўcўs (sweet) and Rhīza (a root).

GRA-NA′-TUM. The first syllable is long (from Latin *grānum*, grain), and the word is to be distinguished from *gran-a-ten′-se*, a geographical name, which precedes it.

GUN-NE′-RA. So Lindley, Wittstein, Glaser, &c. *Gunnĕra* is the common pronunciation.

GYN-AN-DROP′-SIS. *See* Gўnē, gўnaikos (a woman).

GY-RAN′-DRA. *See* Gўrŏs (curved, round).

HE-BE-AN′-DRA. *See* Hēbē (youth).

HE′-DŶ-A. *See* Hēdўs (sweet).

HEL-Ĭ-AM′-PHOR-A. This word, which comes from the same root as *Hĕlicodea*, &c., is not to be confused with *Hēlianthemum* and others coming from *hēlios*.

Pronouncing Dictionary—*continued.*

HE-LĬ-ANTH′-US. *See* Hēlĭŏs (the sun).

HEL-LEB′-OR-US. The Greek form is *Hĕllĕbŏros* (ἑλλέβορος). A modern book, which professes to teach the pronunciation of English plant-names, gives the sound as "Hellie-boar-us"!

HE-MER-OB-Ĭ-EL′-LA. *See* Hēmĕrā (the day).

HE-MĬ-AND′-RA. *See* Hēmĭ (half).

HES-PER-AN′-THA. *See* Hĕspĕrŏs (evening).

HET-ER-AC-AN′-THA. *See* Hĕtĕrŏs (another, different).

HET-ER-OPH-LEB′-Ĭ-UM. *See* Phlĕps, phlĕbŏs (a vein).

HI-MA-LAY-A′-NA. The correct pronunciation of the mountains popularly known as Himālāya is given by the best authorities (*e.g.*, Sir W. W. Hunter) as Himālăya (=*Himāchăl*, snow-mountain).

HOL-OCH-RY′-SUM. *See* Hŏlŏs (whole, perfect).

HOM-AL-ANTH′-US. *See* Hŏmălŏs (even, smooth).

HOM-AL-OM-E′-NA. An altered form of *Homalonēma*, and therefore to be pronounced in a similar manner.

HY-BER′-NĬ-A. From *hȳbernus* (better *hībernus*), winter. *Hĭbernicus* (Irish) has the first syllable short.

HYD-RAN′-GĔ-A. The quantity of the first syllable is doubtful, and the *e* of the penultimate would, in strict accuracy, be long, as coming from the Root-word Angeion, or Angīon (a vessel), which *see*.

HYD-ROC-OT′-YL-E. *See* Hȳdōr, hȳdătŏs (water).

HYM-EN-Æ′-A. *See* Hȳmēn, hȳmĕnŏs (marriage).

HŸ-OS′-CŸ-AM-US. *See* note on Cȳamus *and* the root-word Hȳs, hȳŏs (a pig). The word means Hog's-bean.

HYP-ER-ANTH-E′-RA. *See* Hȳpĕr (above, superior).

HYP-ER′-IC-UM. The Greek form, as found in Dioscorides, is *Hyperīcon* (*ὑπέρεικον*). So Pliny's *Hȳpĕrīcum* (Lewis and Short); White and Riddle, *Hypĕrĭcon*. Lindley gives *ī*; Glaser, &c., *ĭ*. On the whole, *ī* has more authority, though *ĭ* has almost universal usage on its side.

HYP-OC-AL-YM′-MA. *See* Hȳpŏ (beneath, inferior).

HYS-TER-Ĭ-A′-CĔ-I. *See* Hȳstĕrŏs (later, lower).

IB-E′-RIS. The Greek *Ibēris* (*ἰβηρίς*), of Dioscorides; one often hears it called "Eye-bĕr-is."

IM-PAT′-Ĭ-ENS. To be pronounced, if accuracy is attempted, with four syllables as here given, not "Im-pay-shuns," as we often hear it.

I-NOC-AR′-PUS. The first syllable is long, being derived from *īs*, *īnŏs* (*ἴς*, *ἰνός*), a fibre—to be distinguished in sound from the prefix of such words as *in-od-o′-ra*, coming from the Latin preposition *in*.

Ĭ-O-NAN′-THA. *Read* ĭ-on-an′-tha; and *for* Ĭ-O-NE′-MA *read* ĭ-on-e′-ma. *See* Ĭŏn (a violet).

I′-SAT-IS. The Greek *Īsătis* (*ἴσατις*), reproduced in Latin with same quantity, &c.; *Isātis* according to Lindley, Hooker, Alcock, &c. Leunis-Frank and Glaser give it correctly.

JAS-Ĭ-O′-NE. The *Iasĭōne* (*ἰασιώνη*) of Pliny and Theophrastus. Leunis-Frank and Lindley (in Paxton) give it correctly; Hooker, Lindley (in London), &c., *Jasĭŏne*.

JAS-MIN-OD-O′-RA. The Latin adjective *ŏdōrus*, which forms the termination of this word, is often mispronounced *ōdŏrus*, after the analogy of the English word "ōdorous."

KAL-OS-ANTH′-ĒS. *Kalos* here is another form of Călŏs (*καλός*), beautiful (which *see*).

LAG-O′-PUS. *See* Lăgōs (a hare).

LAS-Ĭ-AN′-DRA. *See* Lăsĭŏs (rough, hairy).

LAT-ER-IF-LO′-RA. Words formed from *lătus*, *lătĕris*, a side, are to be distinguished from those which come from *lātus*, broad, such as

LA-TIF-OL′-Ĭ-A, broad-leaved.

LE′-CYTH-IS. The first syllable long, as the name comes from the Greek *lēcȳthos* (*λήκυθος*), a flask. Wittstein, Glaser, Lindley, &c., give it wrongly, *Lecȳthis*.

LE′-JIC-A. This word ought to be italicised.

LE-MO′-NĬ-A. First two syllables are long, from *leimōn* (*λειμών*), a meadow; to be distinguished from *Lemoniana*.

LĔ-O-NO′-TIS. *See* Lĕōn, lĕōntŏs (a lion), and Ous, ōtŏs (an ear).

Pronouncing Dictionary—*continued.*

LEP-ID-AG′-ATH-IS. *See* Lĕpĭs, lĕpĭdos (a scale), *and* Ăgăthŏs (good).

LI-LA′-CIS. This and the kindred words ought to have the "lilac" in italic, coming, as it does, from *Lilas*, the Persian name of the Indigo-plant.

LI′-LĬ-UM. The first syllable is long, as proved by Virgil's line: "*Lĭlia, verbenasque premens, vescumque papaver*"; but the analogy of the English "lily" leads many to mispronounce the Latin word. It is connected with Leirĭŏn or Līrĭŏn (*λείριον*), a Lily (which *see*).

LI-MET′-TA, LI-MO′-NĬ-A, and LI-MO′-NUM to be italicised, as they are derived from the Persian *lī′-mún*, a lemon.

LI-MO-NĪ-AS′-TRUM. *See* Leimōn or Līmōn (a meadow).

LOB-E′-SĬA. *Read* Lo-be-sĭ-a, from *lōbesis* (*λώβησις*), injury.

LO-MAG-RAM′-ME. *See* Lōmă, lōmătŏs (a border, fringe).

LOPH-ANTH′-US. *See* Lŏphŏs (a crest).

LO-RANTH′-US. *See* Lōrōn (a thong).

LOR-IN-SE-RĬ-A. The "Lorinser" to be italicised; the name is commemorative of Dr. Gustave Lorinser.

LYC-OP-OD′-Ĭ-UM. *See* Lȳcŏs (a wolf) *and* Pous or pūs, pŏdŏs (a foot). Lindley gives rightly *Lycopŏdium*; Hooker, McNicoll, &c., *Lycopōdium*.

MAC-ROC-NE′-MUM. *See* Măcrŏs (long), and Cnēmē (the leg).

MAL′-Ĕ-OL-ENS. The first syllable is short, from *mălus* (bad); the compounds of which are to be distinguished from those of *Mālus* (an Apple-tree), whence comes MA′-LI.

ME-CO-NOP′-SIS. *See* Mēcōn, mēcōnŏs (a poppy).

ME′-DIC-A. The first syllable long, from the Greek *Mēdicos* (*Μηδικός*), Median. To be distinguished from *mĕdĭcus* (curative), and from the commemorative MED-I′-CI-A.

MEG-AP-OT-AM′-IC-US. *See* Mĕgăs, mĕgălŏs (big). The "Big River" commemorated is the Rio Grande.

MEL-AL-EU′-CA. *See* Mĕlăs, mĕlănŏs (black).

MEL-AN-ORH′-OD-A. *See* Mĕlăs, mĕlănŏs (black), *and* Rhŏdŏn (a rose).

MEL-IL-O′-TUS. *See* Mĕlĭ, mĕlĭtŏs (honey).

ME′-LO. *See* Mēlŏn (an apple).

MEL-OL-ONTH′-A. Read *Me-lol-onth′-a*; it is the Greek *Mēlŏlŏnthē* (*μηλολόνθη*) mentioned by Aristotle.

ME-NIS-PER′-MUM. From *mēn*, *mēnos* (*μήν*, *μηνός*), a month, the moon, "Moonseed."

MES-ĒM-BRȲ-ANTH′-EM-UM. From *mesembria* (*μεσημβρία*), mid-day. Linnæus gives as the derivation *mĕsŏs* (*μέσος*), middle, and ĕmbrȳŏn (*ἔμβρυον*), an embryo.

MI-CRAN′-DRA. *See* Mīcrŏs (little).

MI′-MUL-US. Latin *Mīmulus*, a diminutive of Greek *mīmŏs* (*μῖμος*), an actor. Pliny has *Mimmulus*, a doubtful plant-name. Rightly Lindley; *Mim′-ŭl-ŭs*, Hooker, &c.

MOL′-LE. To be distinguished from the preceding *Mol′-le*, a Peruvian name, and from the next word marked with an asterisk,

MO′-LY, the Greek *Mōly* (*μῶλυ*) mentioned by Homer.

MON-AC-ANTH′-A. *See* Mŏnŏs (alone, solitary). Some readers may think it unnecessary to point out that the first syllable is short; but those who have heard a late eminent Professor of Botany invariably speaking in his lectures of "Moan-O-Cotyledons" (as if he were calling upon the cotyledons to lament), will acknowledge that it is possible to make a mistake in the matter.

MON-OD′-OR-A. In accordance with the derivation from *Mŏnŏs* and *dŏra* (*δορά*), a skin. *Note* the difference from *in-od-o′-ra* and *jas-min-od-o′-ra*.

MŸ-OS-O′-TIS. *See* Mȳs, mȳŏs (a mouse).

MY-RĬ-AC-ANTH′-A. *See* Myrios.

MYR-OB-AL′-AN-US. *See* Mȳrŏn (sweet ointment) *and* Bălănŏs (an acorn).

NEC-TAN′-DRA. Words derived from *nĕctar* (*νέκταρ*) ought not to be confused with those which come from *nēctris* (*νῆκτρις*), a swimmer, such as *Nēctria*, *Nēctris*.

NE-MAC-O′-NĬ-A. *See* Nēmă, nēmătŏs (a thread).

NEM-OPH′-IL-A. From *nĕmŏs* (*νέμος*), a glade, and Phĭlŏs (fond), which *see*.

Pronouncing Dictionary—*continued.*

NEP′-ET-A. Pliny's name. Lindley gives *Nepēta*, which is the commoner pronunciation.

NEPH-RAN′-DRA. *See* Nĕphrŏs (a kidney).

NI′-BUNG. This word should be italicised.

NOT-EL-Æ′-A. *See* Nŏtŏs (*νότος*), the South, to be distinguished from the compounds of Nōtŏs (*νῶτος*), the back.

OAKES′-Ĭ-A. *See* discussion of *Stokes′-ĭ-a*, &c., p. 348.

O-CHRAN′-THE. The first syllable long, as the word is derived from ōchros (*ὠχρός*), pale.

OD-ON-TAD-E′-NĬ-A. *See* Ŏdous, ŏdŏntŏs (a tooth).

OD-O′-RA. *Compare* the note on jasminodora, above.

ŒN-OTH-E′-RA. Often pronounced *Œn-oth′-ĕr-a*. It is the Greek *Oinothēras* (*οἰνοθήρας*) of Theophrastus.

OL-IG-AN′-THA. *See* Ŏlĭgŏs (little).

OM-PHAL-AN′-DRĬ-A. *See* Ŏmphălŏs (the navel).

ON-CID′-Ĭ-UM. From *oncos* (*ὄγκος*), a tumour, and Eidŏs or īdŏs (appearance), which *see*. Words so derived ought strictly to have their termination pronounced *-īdĭum*. But there are many words in *-idium* which have not this derivation, such as *Aspĭdĭum* (from *aspis*, *aspĭdŏs*), *Glottĭdĭum* (from *glottis*, *glottĭdŏs*), *Lepĭdĭum* (from *lepis*, *lĕpĭdŏs*), *Xiphĭdĭum*, &c.

ON-OS′-ER-IS. *See* Ŏnŏs (an ass) *and* Sĕrĭs (Succory).

ON-YCH′-Ĭ-UM. *See* Ŏnyx, ŏnychŏs (a claw).

OPH-Ĭ-OG-LŌS′-SUM. *See* Ŏphĭs, ŏphĭŏs (a snake).

OP-OP′-ON-AX. The more correct spelling from an etymological point of view is *Opopanax*. *See* Păpax, păpăkŏs (all-heal, panacea).

OR-I′-GAN-UM. Often pronounced *Orĭg′-an-um*; but the Greek form is *Ŏreiganon* (*ὀρείγανον*), Mountain-pride.

OR-NI-THOG′-AL-UM. *See* Ŏrnĭs, ŏrnīthŏs (a bird).

OX-Ŭ-AC-AN′-THA. *See* Ŏxŭs (sharp, acid).

PACH-Ŭ-AN′-THA. *See* Păchŭs (thick).

PAR-AC-AR′-Ŭ-UM. *See* Cărўŏn (a nut, fruit-stone).

PED-I-LAN′-THUS. *See* Pĕdīlŏn (a shoe).

PER-Ĭ-AC-AN′-THUS. *See* Pĕrĭ (round).

PER-IP′-LOC-A. *See* Pĕrĭ (round) *and* Plŏcē (a twining).

PER-ON-OS′-POR-A. From *pĕrŏne* (*περόνη*), a buckle. *Compare* Belo-pĕrŏne, above.

PET-AL-AC′-TE. *See* Pĕtălŏn (a leaf, petal).

PHIL-AD-EL′-PHUS. *See* Phĭlŏs (fond).

PHIL-AG-E′-RĬ-A. This word is partly of classical derivation and partly commemorative, as it is a compound of the names *Philesia* and *Lapageria*—one meaning affection, the other called after the Empress Josephine.

PHLEB-IG-O′-NĬ-UM. *See* Phlĕps, phlĕbŏs (a vein).

PHYL-LACH′-NE. *See* Phyllŏn (a leaf) *and* the note on Ac-iph-yl′-la.

PHY′-SAL-IS. *See* Phўsa (a bladder, bellows), which comes from the same root.

PHYT-EL′-EPH-AS. *See* Phўtŏn (a plant).

PI′-LĔ-A. *See* Pīlŏs (a hat).

PIL-IF′-ER-UM. Words formed from the Latin *pĭlus*, a hair (*e.g.*, *pĭliferum*, *Pĭlosella*, &c.), or from the Latin *pĭla*, a ball (*Pĭlularia*, *pĭlulifera*), are to be distinguished from those which come from the Greek *pīlos* (*πῖλος*), a hat (*Pīlo-carpus*, *Pīlo-phora*).

PIP′-ER. Commonly pronounced as if it were connected with bagpipes; but both the Greek form *Pĕpĕrĭ* (*πέπερι*) and the Latin *Pĭper* have the first syllable short. *Compare* Pep-er-id′-Ĭ-um *and* Pep-er-o′-mĭ-a.

PLAG-Ĭ-AN′-THUS. *See* Plăgĭŏs (oblique).

PLAT-YC-AN′-THA. *See* Plătўs (broad).

PLEC-TOC-EPH′-AL-US. *See* Plĕctŏs (twisted).

PLĒC-TRAN′-THUS. *See* Plēctrŏn (a spur). The length of the first syllable distinguishes this word from the compounds of Plĕctŏs (twisted).

PLOC-OG-LŌT′-TIS. *See* Plŏcē (a twining).

PO-GOG′-YN-E. *See* Pōgōn, pōgōnŏs (a beard), *and* Gўne (a woman).

POL-Ŭ-AC-AN′-THA. *See* Pŏlŭs (much, many).

PO′-PUL-US. The first syllable is long, though generally pronounced short, as in *pŏpulus* (a people). Virgil has "*Pōpulus in fluviis, abies in montibus altis*," and the old memorial line runs—"*Sunt cives urbis pŏpulus, sed pōpulus arbor.*"

POR-PHYR-AN′-THA. *See* Pŏrphўrĕŏs (purple).

PRAS-AN′-THĔ-A. *See* Prăsŏn (a leek).

PRI′-MUL-A. Generally pronounced "Prĭm-mula"; but the first syllable is long, from the Latin *prīmus* (first). Lindley and Hooker give it correctly.

PRUM-NOP′-IT-YS. *See* Pĭtўs, Pĭtўŏs (a Pine-tree).

PSI′-LA. *See* Psīlŏs (bare).

PSY′-CHE. *See* Psўchē (the soul, a butterfly).

PTER-OC-AR′-PUS. *See* Ptĕrŏn (a feather, leaf).

PTIL-OC-NE′-MA. *See* Ptĭlŏn (a feather).

PYR-AC-AN′-THA. *See* Pўr, pўrŏs (a fire).

PY-RE′-NA. This word is not a generic name, but a technical term. For generic names from the same root, *see* Pўrēn, pўrēnŏs (a kernel, fruit-stone).

PYR-ETH′-RUM. *See* Pўr, pўrŏs (a fire). Lindley, Hooker, &c., give *Pyrēthrum*; Glaser rightly, *Pyrĕthrum*, from Greek *Pўrĕthron* (*πύρεθρον*).

PYR′-US. The true Latin form is *Pĭrus*. Lindley gives it correctly; Hooker and Alcock wrongly, *Py′-rus*.

QUEL′-TĬ-A. *Quelt* should be italicised.

RACH-IRH-I′-ZON. *See* Răchĭs or rhăchĭs, rhăchĭŏs (the back).

RA-DI′-CANS. Generally pronounced like the English "radical"; but the first two syllables are long, from *rādix*, *rādīcis* (a root).

RAD′-Ĭ-OL-A. This word, a diminutive of *rădius*, has had much the same fate as *Glăd′-ĭŏlus*, a diminutive of *glădius*. It is often called *Radĭō′-la*, sometimes *Radī-ŏla*; and by very few correctly, *Rad′ĭŏla*, with all the syllables short. One book actually prints it "Ray-di-ō-lah," Hooker has *Radi′ola*; Alcock gives that and the correct form.

RA-NUN′-CUL-US. First syllable long, from *rāna* (a frog).

RAPH-ID-AC-AN′-THA. *See* Răphĭs or rhăphĭs, rhăphĭdŏs (a needle).

RHAPH-ID-OPH′-OR-A. In this word we have a more correct spelling of *Raphidophora*. *See* the remarks at the beginning of List of Root-words.

RHI-NAC-AN′-THUS. *See* Rhis, rhīnŏs (the nose.)

RHI-PID-OD-EN′-DRON. *See* Rīpis or rhīpĭs, rhīpĭdŏs (a fan).

RHI-ZOB′-Ĭ-US. *See* Rhīza (a root).

RHOD-OD-EN′-DRON. *See* Rhŏdŏn (a rose). The first syllable is short.

RHYT-ID-AN′-DRA. The first two syllables are short from *Rhўtis*, *rhўtĭdŏs* (*ῥυτίς*, *ῥυτίδος*), a wrinkle.

ROS′-A. Although the English word "Rose" and the girl's name "Rosa" are pronounced with the *o* long, the Latin *Rŏsa* has it short. It is connected with *Rhŏdon*, just as *Lĭlĭum* is connected with *Lirion*. Lindley (in Paxton, 1840) gives it correctly; Lindley (in London, 1829), Hooker, Alcock, and the rest, wrongly, *Rō-sa*.

RUB′-ER, and its derivative (*See* Vaničk, p. 14),

RUB′-US, have the first syllable short: "*Mella fluant illi, ferat et rŭbus asper amomum*"—Virgil. The text-books are divided, as in the case of *Rosa*.

SAX-IF′-RAG-A. "The Stone-breaker." *Compare* os-sif′-rag-um (bone-breaking). All authorities of any worth, either in English or German, give this word correctly *Sax-if′-răg-a*; but a book which seems to aim at being a handy little compendium of every vulgar error in pronunciation (and, indeed, has a certain amount of usefulness in that way), prints it "Sax-i-frā-gah." This sound is, unfortunately, often heard.

SCAPH′-A. *See* Scăphē (a boat, skiff).

SCHŒN-OP′-RAS-UM. *See* Prăsŏn (a leek). Alcock gives it wrongly *-pra′-sum*, and the "authority" mentioned under Saxifraga boldly writes "Skee-nō-pray-sum"! All others correctly.

SCĬ-AD-OC′-AL-YX. *See* Scĭăs, scĭădŏs (a shade, an umbrella).

Pronouncing Dictionary—*continued.*

SCLA′-RĔ-A. This word is a late Latin one, occurring in the work of Walafrid Strabo, and should therefore not be italicised.

SCLE-RAN′-THUS. The first syllable long, from the Greek *sclērŏs* (*σκληρός*) hard.

SEC-A′-LE. The Latin *Sĕcāle*: it is sometimes wrongly pronounced *Sec′-ăl-e*, and sometimes in two syllables exactly like the English sea-kale.

SED′-UM. The first syllable is almost always sounded with a long *e*, and is so given in many books; but the Latin word used by Pliny is *Sĕdum*.

SE-MĬ-A-LA′-TA. The Latin *sēmĭ*, half, like the corresponding Greek *Hēmĭ* (which *see* among the Root-words), has the first syllable long.

SEN-EC′-Ĭ-O. This is an old Latin word used by Pliny, and has the second syllable short.

SE-TA′-CĔ-A. This and several words beginning with the same letters come from the Latin *sēta* (a bristle). *Compare* brevisēta.

SID-E-RI′-TIS. *See* Sĭdērŏs (iron).

SIPH′-O. *See* Sĭphōn, sĭphōnŏs (a reed, tube).

SIPH-OC-AM′-PYL-OS. *See* Sĭphōn, sĭphōnŏs (a reed, tube) *and* Campylŏs (curved).

SI-TOC-O′-DĬ-UM. *See* Sītŏs (Wheat).

SO-LE′-NA. *See* Sōlēn (a pipe).

SOPH′-Ĭ-A. *See* p. 347. This is the Greek *sŏphĭa* (*σοφία*), wisdom. Lindley and Hooker give *Sophi′-a* wrongly; but Alcock corrects the form into *Soph′-ia* in his "Additions and Corrections."

SO-ROC-EPH′-AL-US. *See* Sōrŏs (a heap).

SPATH-A′-CĔ-A. *See* Spăthē (a blade, flower-sheath).

SPER-MAC-O′-CE. From *acōcē* (*ἀκώκη*). *Compare* Ac-o′-kan-the′-ra, p. 277.

SPHÆR-OTH-E′-LE. *See* Thēlē (a teat).

SPHE-NAN′-DRA. *See* Sphēn, sphēnŏs (a wedge).

SPI-LAN′-THĒS. *See* Spīlŏs (a spot).

SPI-RÆ′-A. *See* Spīra or speira (a coil).

SPOR-AD-OC-AR′-PUM. From the Greek *spŏrăs, spŏrădŏs* (*σποράς, σποράδος*), scattered. *See* Spŏră (a seed).

STACH-Ŷ-OP-O′-GŌN. *See* Stăchys, stăchyŏs (an ear of corn).

STAN′-LEY-A. Lindley thus gives the pronunciation of this name, in accordance with that of the surname from which it comes; but Wittstein and others, erroneously, *Stan-ley′-a*. *See* p. 348.

STAPH-ŶL-E′-A. *See* Stăphylē (a cluster of grapes).

STE-MO′-DĬ-A. *See* Stēmōn (the warp, a stamen).

STEN-OC-AR′-PUS. *See* Stĕnŏs (narrow).

STEPH-AN-AN′-DRA. *See* Stĕphŏs and Stĕphănē (a crown).

STI-PIT-A′-TUM. *See* note on albo-stipes.

STOKES′-Ĭ-A. Even Lindley gives this Stokēsĭa. For a full discussion of the word, see p. 348.

STROB′-IL-A. *See* Strŏbĭlŏs (a fir-cone).

STY-LAN′-DRA. *See* Stylŏs (a pillar, style). The termination *-stylis*, has been given as short all through the Pronouncing Dictionary, since the authors of the names in which it occurs held the old belief that the Latin *stylus* was the representative of the Greek *stylos* (*στῦλος*). This etymology has now been proved quite groundless, as *stylus* is a mistake for *stĭlus*, coming from the root *stig* (*compare* Vaniček, Lewis and Short, &c., *sub voc.*): in strict accuracy, therefore, the termination ought to be *-stylis*.

SU′-BER, cork, has the first syllable long, the second short; from it comes

SU-BER-O′-SA, corky, which is pronounced similarly, and which differs completely from

SUB-E-RO′-SA, slightly indented; this has the first syllable short, the second long. *See* Martyn, *sub voc.*

SY-KES′-Ĭ-A. *Delete* the first hyphen. *See also* discussion of the word on p. 348.

SYN-AR′-RHEN-A. *See* Arrhēn, arrhĕnŏs or arrĕnŏs (a male).

SY-RING′-A. *See* Sŷrinx, sŷringŏs (a pipe).

THEC′-A. This generic name comes from the Malabar

Pronouncing Dictionary—*continued.*

theka or *tekka*, which is also seen in *Tec′-ton-a*; it is to be carefully distinguished from the Latin *theca*, Greek *Thēcē* (*θήκη*), which *see*.

THE′-LA. *See* Thēlē (a teat).

THE-LYG-ON′-Ĕ-Æ. *See* Thēlŷs (female).

THE′-SĬ-UM. Better *The-si′-um*. It is the *Thēseiŏn* (*θήσειον*) of Theophrastus, Pliny's *Thēsion* (Lewis and Short). White and Riddle give *Thĕsium*, Withering, Lindley, and others, *Thēsium*.

THU-RIF-RA′-GA. This word, meaning odoriferous, is not connected with the *-frăga* in *Saxifrăga*.

THYM′-US. The Greek *Thŷmos* (*θύμος*), Thyme, has the first syllable short, and is thereby distinguished from *thȳmos* (*θυμός*), the soul. Although the quantity appears plainly in a well-known line of the Æneid: "*Fervet opus, redolentque thŷmo fragrantia mella*," Lindley and his followers all mistake the pronunciation of the word.

TRA-CHYC-AR′-PUS. *See* Trăchys (rough).

TRAG′-Ĭ-A. *See* Trăgŏs (a he-goat). The name is really commemorative of Jerome Bock. *See* p. 348.

TRICH-AN′-THA. *See* Thrix, trĭchŏs (hair).

TRI′-TIC-UM. The first syllable long (*compare* Alcock, "Additions and Corrections"), to be distinguished from *Trit′-om-a*.

TRIT′-OM-A, the Greek *trĭtŏmos* (*τρίτομος*), thrice-cut. *See* Tŏmē (a cut). Lindley, followed by McNicoll, gives *Tritōma*; Wittstein and Glaser rightly *Tritŏma*.

TROP-Æ′-OL-UM. A vulgar rendering is *Trop-æ-o′-lum*.

TROP-ID′-Ĭ-A. *See* Trŏpis, trŏpĭdŏs (a keel).

TUB-A′-TA. The *u* in *tŭba* (a trumpet) is short, and the words which contain *tūba* should be pronounced differently from those formed from

TU′-BER, which has the first syllable long.

TYL-OCH-I′-LUS. *See* Tylŏs (a knot).

UM-BIL-I′-CUS. Often pronounced as if it were "Umbilly-cus."

U′-NED-O. Few words could present less difficulty as to pronunciation. It comes from *ūnus* (one) and *ĕdo* (I eat)—since no one had the courage to eat a second—and the word *Ūnĕdo* itself is found in Pliny. Withering, who took much pains about pronunciation, gives it correctly; but Lindley, followed as usual by Alcock, Hooker, &c., have *Unēdo*, and they have succeeded in making people say, "You-need-oh."

U-ROC-YS′-TIS. *See* Oura (a tail).

UR-TI′-CA. Often wrongly pronounced *Ur′-tic-a*. It is so given by Lindley (in Parton), and by Alcock, who afterwards corrected it.

VAC-CI′-NĬ-UM. The second syllable is long, as in Virgil's "*Alba ligustra cadunt, vaccīnia nigra leguntur.*"

VAG′-ANS. The first syllable is short, while the similar combination of letters in *vaginalis*, &c., is long.

VER-ON-I′-CA. This mediæval word is probably a Latin form of the Greek *Bĕrŏnikē* (*Βερονίκη*). (*See* Karl Pearson's "Die Fronica.") Many other derivations have been ascribed, such as the Arabic *waron nikon* (beautiful remembrance)! Withering says quaintly, "In *Veroni′ca* the *Ni* is to be the accented syllable, and not the *Ro*, which is a common error." Alcock, who adopts the derivation, *hiera eicon* (*ἱερά εἰκών*), sacred image, follows him in this: Lindley, Hooker, &c., persist in the "common error."

VE-SI-CA′-RĬ-A. The first two syllables in this and the five following words on p. 343 are long. They are very frequently pronounced as if short.

WAG′-NER-I. *Delete* the long mark over *a* in this and three following words on p. 344. The *w* in words derived from German proper names is generally sounded as our *v*.

XE-RAN′-DRA. *See* Xērŏs (dry).

XIPH-ID′-Ĭ-UM. *See* Xiphŏs (a sword).

XYL-AC-AN′-THA. *See* Xylŏn (wood).

ZA′-MĬ-A. *See* Zēmĭa (loss).

ZO-STE′-RA. *See* Zōstēr (a belt).

ZYG-AD-E′-NUS. *See* Zygŏn (a yoke).

Pronouncing Dictionary—*continued.*

LIST OF GREEK ROOT-WORDS,

From which a large number of Botanical Names are derived.

The words given in the original Greek characters are often very helpful in showing what is the correct pronunciation, as the Greek alphabet has different letters for long and short vowels: ε = ĕ, as *ἀνθεμίς* = anthĕmis; η = ē, as *ἀνθηρά* = anthēra; ο = ŏ, as *βρόμος* = brŏmos; ω = ō, as *βρῶμα* = brōma. When Greek words are written in Latin characters, ει is often represented by *ī*, as *χεῖλος* = cheilos or chīlos; ου by *ū*, as *οὐρά* = oura or ūra; αι by æ, as *χαμαί* = chamæ. The Greek υ is generally represented by the Latin *y*, and the terminations -ος and -ον are frequently written in Latin as -*us* and -*um*; *e.g.*, *βρύον*, moss, appears in botanical nomenclature as *Bryum*, as well as *Bryon*. Of the consonants, the Greek κ becomes in Latin *c*, χ is represented by *ch*, and γγ by *ng*: *καλός* = calos, *χρυσός* = chrysos, *ἀγγεῖον* = angion. The aspirate, or rough breathing [῾] ought to be represented by *h*; but this is sometimes incorrectly omitted in botanical names: for instance, from *ἄῤῥην* (arrhēn) we find *arrenum* as well as *arrhena*; and *ῥαφις* (rhaphis) produces *Raphidophora* as well as the more correct *Rhaphidophora*. In this list, words in which the root appears as a prefix are divided by a colon from words in which it appears as a postfix; the semicolons separate the different forms of the prefixes or postfixes. The words themselves are divided internally by hyphens in accordance with their etymology, not as in the body of the Pronouncing Dictionary.

ROOT-WORD.	EXAMPLES OF DERIVATIVES.
Ăchўrŏn (*ἄχυρον*), chaff	Ăchўr-anthes, Ăchўr-acantha; Ăchўrŏ-nia, Ăchўrŏ-pappus.
Ăcĭs, ăcĭdŏs (*ἀκίς, ἀκίδος*), a point	Ăcĭ-notus, Ăcĭ-phylla; Ăcĭd-andra; Ăcĭsanthera.
Actĭs, actīnŏs (*ἀκτίς, ἀκτῖνος*), a ray	Actīno-carpus, Actīno-lepis, Actīno-meris, Actīno-nema.
Ădēn, adĕnŏs (*ἀδήν, ἀδένος*), a gland	Ădĕn-andra, Ădĕn-anthera; Ădĕno-carpus, Ădĕno-phora: Dipl-ădĕnia, Gymn-ădĕnia; Myri-ădĕnus, Tachi-ădĕnus.
Ăgăthŏs (*ἀγαθός*), good	Ăgăth-a, Ăgăth-is; Ăgăthŏ-meris, Ăgăthŏ-phyllum: Lepid-ăgăthis, Phyll-ăgăthis.
Ampĕlŏs (*ἄμπελος*), a vine	Ampĕl-opsis; ampĕlŏ-phagum, Ampĕlŏ-sicyos: Ciss-ampĕlŏs.
Angeiŏn or Angīŏn (*ἀγγεῖον*), a vessel	Angī-anthus; Angīŏ-pteris: Anœct-angium.
Anthĕmŏn (*ἄνθεμον*), a flower	Chrys-anthĕmum, Heli-anthĕmum, Leuc-anthĕmum, Mesembry-anthĕmum.
Anthēra (*ἀνθῆρα*), an anther	Acis-anthēra, Cephal-anthēra, Cyrt-anthēra, Plat-anthēra.
Argўrŏs (*ἄργυρος*), silver	Argўr-eia, Argўrŏ-chæta, Argўrŏ-phyton, argўrŏ-stigma.
Arrhēn, arrhĕnŏs or arrĕnŏs (*ἄῤῥην, ἄῤῥενος*) a male	Gloss-arrhēn; Odont-arrhēna, Syn-arrhĕna; Dis-arrĕnum.
Bălănŏs (*βάλανος*), an acorn	Bălăn-ites; Bălănŏ-pteris: Chryso-bălănŭs, Myro-bălănŭs.
Bărўs (*βαρύς*), heavy	Bărў-andra, Bărў-osma, bărў-stachys, Bărў-xylon.
Bĕlŏs (*βέλος*), a dart	Bĕlŏ-perone, bĕlŏ-phorus, bĕlŏ-phyllum.
Bĭŏs (*βίος*), life	Bĭŏ-phytum, Bĭŏ-rhiza: Ammo-bĭum, Dendro-bĭum, Petro-bĭum.
Blĕphărĭs (*βλεφαρίς*), an eyelash	Blĕphărĭs, blĕphărĭ-glottis: Calli-blĕphărĭs, Carpi-blĕphărŏ-phylla: Octo-blĕphărŏn. [blĕphărĭs.
Blĕphărŏn (*βλέφαρον*), an eyelid	
Bŏtrўs, bŏtrўŏs (*βότρυς, βότρυος*), a cluster	Bŏtrў-anthus: Bŏtrўŏ-dendron: Poly-bŏtrўa: Adelo-bŏtrўs, Leuco-bŏtrўs, macro-bŏtrўs.
Brăchўs (*βραχύς*), short	Brăchў-chiton, Brăchў-come, Brăchў-loma, Brăchў-rhynchos, Brăchў-sema.
Brōma (*βρῶμα*), food	Bu-brōma (Bulls' Food), Ono-brōma (Asses' Food), Theo-brōma (the Gods' Food), Hippo-brōmus (Horses' Food).
Būs (*βοῦς*), an ox, a bull	Bū-ceras (Bull's Horn), Bū-cephalon (Bull's Head), Bū-glossum (Bull's Tongue, "Oxtongue").

Pronouncing Dictionary—*continued.*

Root-word.	Examples of Derivatives.
Călŏs (*καλός*), beautiful	Căl-anthe ; Căl-ea, Călŏ-chilus, Călŏ-dendron, Călŏ-pogon.
Călўptra (*καλύπτρα*), a veil	Călўptr-anthes, Călўptr-ion ; Călўptro-calyx, Călўptro-gyne, Călўptro-noma.
Călўx, călўcŏs (*κάλυξ, κάλυκος*), a covering, calyx	Călўc-anthus, Călўc-ium ; Călўcŏ-stemma, Călўcŏ-tome : Physo-călўcĭum Calyptro-călўx, Macro-călўx.
Cămpўlŏs (*καμπύλος*), curved	Cămpўl-anthera ; Cămpўlŏ-botrys, Cămpўlŏ-centron, Cămpўlŏ-neuron : Sipho-cămpўlŏs.
Cărўŏn (*κάρυον*), a nut, fruit-stone	Cărў-a ; Cărўŏ-phyllus, Cărўŏ-pteris, Cărўŏ-taxus : Lepido-cărўa, Ptero-cărўa ; Astro-cărўum, Para-cărўum.
Cĕphălē (*κεφαλή*), a head	Cĕphăl-anthera, Cĕphăl-otus : a-cĕphălă ; Bu-cĕphălon ; Dasy-cĕphălum ; Dracocĕphalum ; Cerato-cĕphălus.
Cĕrăs, cĕrătŏs (*κέρας, κέρατος*), a horn	Cĕrăs-tium ; Cĕrătŏ-cephalus, Cĕrătŏ-chilus, Cĕrătŏ-dactylis : Brachy-cĕrăs, Bu-cĕrăs, Lepto-cĕrăs.
Chămæ (*χαμαι*), on the ground, dwarf	Chămæ-batia, Chămæ-buxus, Chămæ-cerasus, Chămæ-cistus.
Chărĭs, chărĭtŏs (*χάρις, χάριτος*), grace, beauty	Chărĭ-anthus, Chărĭ-eis : Ammo-chărĭs, Eu-chărĭs, Hydro-chărĭs, Limno-chărĭs, Oreo-chărĭs.
Cheilŏs *or* chīlŏs (*χεῖλος*), a lip	Cheil-anthes ; Cheilŏs-andra ; Chīlŏ-gnatha : Anœcto-chīlus, Crypto-chīlus ; chloro-chīlum, macro-chilum.
Cheima *or* chīma, chīmătŏs (*χεῖμα, χείματος*) cold, winter	Chīmă-phila ; Cheīmătŏ-bia ; Chīmon-anthus (from chīmōn, chīmōnos = winter).
Cheir *or* chīr, chīrŏs (*χείρ, χειρός*), a hand	Cheir-anthus ; Cheirŏ-glossa, Cheirŏ-stemon ; Chīrŏ-myces.
Chĭōn, chĭŏnŏs (*χιών, χιόνος*), snow	Chĭŏn-anthus, Chĭŏn-aspis ; Chĭŏnŏ-doxa, Chĭŏnŏ-graphis.
Chĭtōn, chĭtōnŏs (*χιτών, χιτῶνος*), a tunic	Chĭtōn-ia : Diplo-chĭta ; Brachy-chĭtōn, Rhodo-chĭtōn.
Chlămўs, chlămўdŏs (*χλαμύς, χλαμύδος*), a cloak	Chlămўd-ia ; Chlămўdŏ-stylis ; Chlămў-sporum : Allo-chlămўs, Diplo-chlămўs.
Chlŏă (*χλοά*), grass	Chlŏ-anthes, Chlŏ-opsis : Echino-chlŏă ; Hiero-chlŏē.
Chlōrŏs (*χλωρός*), green	Chlōr-a, Chlōr-antha ; Chlōrŏ-galum, Chlōrŏ-phytum.
Chrŏă (*χρόα*), colour	Calli-chrŏa, Di-chrŏa, Eu-chrŏa, Salpi-chrŏa.
Chrōmă, chrōmătŏs (*χρῶμα, χρώματος*), colour	chrōmăt-ella : Di-chrōma, Eu-chrōma, penta-chrōmum.
Chrўsŏs (*χρυσός*), gold	Chrўs-anthemum, Chrўs-urus ; Chrўsŏ-balanus, Chrўsŏ-gonum : Eli-chrўsum, Heli-chrўsum, holo-chrўsum.
Clădŏs (*κλάδος*), a branch	Clăd-ius ; Clădŏ-bium, Clădŏ-sporium : acro-clădŏn, ptero-clădŏn ; Macro-clădus, Phyllo-clădus ; Como-clădia ; tricho-clăda.
Clīnē (*κλίνη*), a couch	Clīnŏ-podium, Clīnŏ-stylis : Eury-clīnē ; Acro-clinium. Coma-clīnĭum, Mega-clīnĭum : Platy-clīnis.
Cnēmē (*κνήμη*), the leg	Erio-cnēma, Ptilo-cnēma ; Macro-cnēmum, Poly-cnemum.
Cōdōn, cōdōnŏs (*κώδων, κωδώνος*), a bell	Cōdōn-ium ; Cōdōnŏ-phora : Phæno-cōdōn, Platy-codon.
Cŏmē (*κόμη*), hair	Cŏma-clinium ; Cŏme-sperma : acantho-coma, Calli-coma, Chryso-cŏma ; Amphi-come, Brachy-come.
Cōnŏs (*κῶνος*), a cone	Cōn-androu, Conŏ-carpus. Cōnŏ-clinium. Cōnŏ spermum.
Cŏrўs, cŏrўthŏs (*κόρυς, κόρυθος*), a helmet	Cŏrў-anthes ; Corys-anthera, Coryth-acanthus.
Cŏrўnē (*κορύνη*), a club	Cŏrўnē-um ; Cŏrўnŏ-carpus ; Crypto-cŏrўne.
Cŧŏnŏs (*κτονος*), a murder	Cyno-ctŏnum (dog-slaying), lyco-ctŏnum (wolf-slaying), melo-ctŏnum (badger-slaying).
Cўănŏs (*κύανος*), dark blue	Cўăn-anthus, Cўăn-ella, Cўăn-otis, Cўăn-us ; cўănŏ-carpus, Cўănŏ-phyllum.
Cўăthŏs (*κύαθος*), a cup	Cўăth-ea, Cўăth-odes ; Cўăthŏ-coma, Cўăthŏ-phora.
Cўōn, cўnŏs (*κύων, κύνος*), a dog	cўn-anchica, Cўn-anchum, Cўn-odon ; Cўnŏ-crambe, Cўnŏ-ctonum : Apo-cynum.
Cўphŏs (*κυφός*), bent, round	Cўph-ia, Cўph-iella ; Cўphŏ-kentia, Cўphŏ-sperma.
Dăctўlŏs (*δάκτυλος*), a finger	Dăctўlĭ-capnos ; Dăctўlŏ-ctenium : Cerato-dactўlis. Penta-dăctўlis ; Poly-dăctўla ; Lepto-dăctўlŏn.
Dăsўs (*δασύς*), thick, hairy	dăsў-antha, Dăsў-chira, Dăsў-lirion, dăsў-phylla.
Dĕcă (*δέκα*), ten	dĕc-andra ; Dĕcă-belone, Dĕcă-spermum, Dĕcă-spora.
Dĕrma, dĕrmătŏs (*δέρμα, δερματος*), skin	Dĕrmătŏ-phora, Dermato-carpon : Peri-dĕrmĭum : Lepto-dĕrmis ; Caly-dĕrmos.
Dĭchă (*δίχα*), in two, asunder	Dĭch-æa, Dĭch-opsis ; Dĭchŏ-sĕma, dĭchŏ-toma.
Dictўŏn (*δίκτυον*), a net	Dictў-anthus ; Dictўŏ-gramme, Dictўŏ-pteris, Dictўŏ-sperma : Calo-dictўŏn ; Hemi-dictўum.
Dĭdўmŏs (*δίδυμος*), twin	Dĭdўmŏ-carpus. Dĭdymo-chlæna. Didymo-sperma.
Dŏlĭchŏs (*δολιχός*), long	Dŏlĭchŏs. Dolichŏ-gyne. dolichŏ-centra. dolicho-rhiza.
Dōrŏn (*δῶρον*), a gift	Dōr-ema : Geo-dōrum. Haemo-dorum. Limo-dorum.
Dŏrў, dŏrătŏs (*δόρυ, δόρατος*), a spear	Dŏrў-anthes : Dŏrўŏ-pteris : Dorat-anthera : Dŏrato-lepis.

Pronouncing Dictionary—*continued.*

ROOT-WORD.	EXAMPLES OF DERIVATIVES.
Drăcōn, drăcŏntŏs (*δράκων, δράκοντος*), a dragon	Drăc-æna; Drăcŏ-cephalum; Drăcŏnt-ium: Calo-drăcōn; Pseudo-drăcŏntium.
Drȳs, drўŏs (*δρῦς, δρυός*), an oak	Drўŏ-balanops, Drўŏ-pteris, Drўŏ-stachyum: Chamæ-drys, Chamæ-drўŏn.
Ĕchĭs, ĕchĭŏs (*ἔχις, ἔχιος*), a viper, an adder	Ĕchĭ-um, Ĕchĭ-opsis; Ĕchĭŏ-glossum, Ĕchĭŏ-ides.
Ĕchīnŏs (*ἐχῖνος*), a hedgehog	Ĕchīn-anthus; Ĕchīnŏ-cactus, Ĕchīnŏ-spermum.
Eidŏs *or* īdŏs (*εἶδος*), appearance	asphodelo-īdēs, asparago-īdēs, asaro-īdēs, dactylo-īdēs, Echio-īdēs; Ion-īdium, Ionops-īdium.
Ĕrēmŏs (*ἐρῆμος*), desert, solitary	Ĕrēm-ia, Ĕrēm-urus; ĕrēmĭ-cola; Ĕrēmŏ-phila, Ĕrēmŏ-stachys.
Ĕrĭŏn (*ἔριον*), wool	Ĕrĭ-a, Ĕrĭ-opsis; Ĕrĭŏ-botrya, Ĕrĭŏ-chilus, Ĕrĭŏ-pappus.
Ĕrўthrŏs (*ἐρυθρός*), red	Ĕrўth-ea; Ĕrўthr-ina, ĕrўthrŏ-rachis; Ĕrўthrŏ-xylon.
Gălă, gălăctŏs (*γάλα, γάλακτος*), milk	Găl-anthus; Gălact-ia, Gălact-ites; Gălacto-dendron: Poly-găla, Ornitho-gălum.
Gălĕē (*γαλέη*), a weasel	Găl-opsis; Găl-ŏ-bdolon, Găl-ŏ-glossum.
Geitōn or gētōn, (*γείτων*) a neighbour	Ammo-gētōn, Apono-gētōn, Potamo-gētōn.
Glōssa (*γλῶσσα*), a tongue	Glōss-anthus; Glōssŏ-comia, glōssŏ-mystax: Cheiro-glōssa, Rhyti-glōssa; Bu-glōssum, Ophio-glōssum.
Glōttĭs, glōttĭdŏs (*γλωττίς, γλωττίδος*), a mouthpiece	Glōttid-ium: Blephari-glōttis, Dasy-glōttis, Hexa-glōttis, Lepto-glōttis, Sarco-glōttis, Tricho-glōttis.
Glўcўs (*γλυκύς*), sweet	Glўc-ine, Glўc-osmis; glўcў-phyllos, Glўcўr-rhiza.
Gōnĭa (*γωνία*), an angle	Gōnĭŏ-phlebium, Gōnĭŏ-pteris; Gōnŏ-calyx, Gōnŏ-stemon: Tri-gōnĭa, Tetra-gōnĭa; Aniso-gōnĭum, Oxy-gōnĭum.
Gŏnŏs (*γόνος*), offspring	Chryso-gŏnum, Poly-gŏnum (?), Thely-gŏnum.
Gŏnў, gŏnătŏs (*γόνυ, γόνατος*), the knee	Gŏnў-anthes; Gŏnăt-anthus, gŏnăt-odes; Gŏnătŏ-pus.
Gўnē, gўnaikŏs (*γυνή, γυναικός*), a woman	Gўn-andropsis; Gўnŏ-cephala: Ancyclo-gўnē, Calo-gўnē, Pleuro-gўnē; Cerato-gўnum; andro-gўnus.
Gўrŏs (*γυρός*), curved, round	Gўr-andra; gўrŏ-bulbon, Gўrŏ-stachys, Gўrŏ-theca.
Hēbē (*ἥβη*), youth	Hēbē-andra, hēbē-carpum, Hēbē-cladus, Hēbē-clinium.
Hēdўs (*ἡδυς*), sweet	Hēdўa, Hēdў-andra, Hēdў-osmum, Hēdў-scepe.
Hēlĭŏs (*ἥλιος*), the sun	Hēlĭ-anthus, Hēlĭ-opsis; Hēlĭŏ-carpus, Hēlĭŏ-tropium.
Hēmĕră (*ἡμέρα*), the day	Hēmĕrŏ-bius, hēmĕrŏ-biella, Hēmĕrŏ-callis.
Hēmĭ (*ἡμι*), half	Hēmĭ-andra, Hēmĭ-dictyum, Hēmĭ-meris, Hēmĭ-onitas.
Hĕspĕrŏs (*ἕσπερος*), evening	Hĕspĕr-antha, Hĕspĕr-is, Hĕspĕr-idium; Hĕspĕrŏ-scordon.
Hĕtĕrŏs (*ἕτερος*), another, different	hĕtĕr-acantha, Hĕtĕr-actis, Hĕtĕr-anthera; Hĕtĕrŏ-phlebium, Hĕtĕrŏ-ptera, Hĕtĕrŏ-theca.
Hŏlŏs (*ὅλος*), whole, perfect	hŏlŏ-chrysum, Hŏlŏ-discus, Hŏlŏ-gymne, Hŏlŏ-schœnus.
Hŏmălŏs (*ὁμαλός*), even, smooth	Hŏmăl-anthus, Hŏmăl-ium; Hŏmălŏ-nema.
Hўdōr, hўdătŏs (*ὕδωρ, ὕδατος*), water; in compounds, hўdrŏ (*ὑδρο*)	Hўdr-angea; Hўdrŏ-charis, Hўdrŏ-phyllum.
Hўmēn, hўmĕnŏs (*ὑμήν, ὑμένος*), marriage; y short in Latin	Hўmĕn-andra, Hўmĕn-anthera; Hўmĕnŏ-callis, Hўmĕnŏ-dictyon, Hўmĕnŏ-phyllum: Calyx-hўmĕnia.
Hўpĕr (*ὑπέρ*), above, superior	Hўpĕr-anthera, Hўpĕr-teles.
Hypo (*ὑπό*), beneath, inferior	Hўp-ericum; Hўpŏ-calymma, Hўpŏ-glauca, Hўpŏ-lepis.
Hўs, hўŏs (*ὗς, ὑός*), a pig	Hўŏ-phorbe, Hўŏ-spathe; Hўŏs-cyamus.
Hўstĕrŏs (*ὕστερος*), later, lower; hystera (*ὑστέρα*), matrix	Hўstĕr-ia, Hўstĕr-ium; Hўstĕrŏ-carpus, Hўstĕrŏ-nica.
Ĭŏn (*ἴον*), a violet	ĭŏn-antha, Ĭon-opsis; ĭŏnŏ-charis, ĭŏnŏ-ptera: Leuco-ĭum.
Lăgōs (*λαγώς*), a hare	Lăgō-pus (Hare's Foot); lăg-otis (Hare's Ear).
Lăsĭŏs (*λάσιος*), rough, hairy	Lăsĭ-andra; Lăsĭŏ-nema, Lăsĭŏ-petalum, Lăsĭŏ-pus.
Lĕcănē (*λεκανη*), a dish	Lĕcăn-ium, Lĕcăn-ora, Lĕcăn-otis; Lĕcănŏ-pteris.
Lēcўthŏs (*λήκυθος*), an oil-flask	Lēcўth-ea, Lēcўth-is, Lēcўth-ideæ, Lēcўth-opsis.
Leimōn *or* līmōn, līmōnŏs (*λειμών, λειμῶνος*), a meadow	Līmōn-ium; Līmōni-astrum; līmōnii-folium: Acantho-līmōn.
Leirĭŏn *or* līrĭŏn (*λείριον*), a lily	Līrĭ-anthe; Līrĭŏ-dendron: Pyro-līrĭon; Chamæ-līrĭum.
Lĕōn, lĕŏntŏs (*λέων, λέοντος*), a lion	Lĕōn-otis, Lĕōn-urus; Lĕŏnt-odon; Lĕŏntŏ-podium, lĕŏntŏ-glossa: Chamæ-lĕon.
Lĕpĭs, lĕpĭdŏs (*λεπίς, λεπίδος*), a scale	Lĕpĭd-agathis, Lĕpĭd-ium; Lĕpĭdŏ-caulon, lĕpĭdŏ-phylla: Actino-lĕpĭs, Iso-lĕpĭs, Lopho-lĕpĭs, Platy-lĕpĭs.

Pronouncing Dictionary—*continued.*

ROOT-WORD.	EXAMPLES OF DERIVATIVES.
Lŏbŏs (λοβός), a lobe	Lŏbŏ-stemon: acuti-lŏba, Cocco-lŏba; Aniso-lŏbŭs; Amphi-lŏbĭŭm, Astro-lŏbĭŭm, Epi-lŏbĭŭm.
Lōmă, lōmătŏs (λῶμα, λώματος), a border, fringe	Lōmă-gramme; Lōm-andra; Lōmătŏ-gonium, Lōmătŏ-phyllum: Antho-lōma, Micro-lōma, Platy-lōma.
Lŏphŏs (λόφος), a crest	Lŏph-anthus, Lŏph-idium; Lŏphŏ-lepis, Lŏphŏ-sorus: Alectoro-lŏphŭs, Platy-lŏphŭs; Amphi-lŏphĭŭm.
Lōrŏn (λῶρον), a thong	Lōr-anthus; Lōrŏ-glossum, Lōrŏ-petalum.
Lўcŏs (λύκος), a wolf	lўcŏ-ctonum, Lўcŏ-perdon, Lўcŏ-persicum, Lўcŏ-podium.
Măcrŏs (μακρός), long	măcr-acantha, Măcr-anthus; Măcrŏ-cladus, Măcrŏ-cnemum, Măcrŏ-glossa, Măcrŏ-rhynchus, Măcrŏ-stigma.
Mēcōn, mēcōnŏs (μήκων, μήκωνος), a poppy	Mēcōn-opsis, Mēcōn-idium: Dendro-mēcōn, Eo-mēcōn.
Mĕgăs, mĕgălŏn (μέγας, μεγάλον), big	Mĕgă-carpha, Mĕgă-chile; mĕgăl-antha; Mĕgălŏ-theca.
Mĕlăs, mĕlănŏs (μέλας, μέλανος), black	Mĕlă-leuca, Mĕlă-stoma; Mĕlăm-pyrum, Mĕlăm-psora; mĕlăn-ops; Mĕlănŏ-pteris: Chryso-mĕlăs.
Mĕlĭ, mĕlĭtŏs (μέλι, μελίτος), honey	Mĕlĭ-anthus, Mĕlĭ-cocca, Mĕlĭ-cope, Mĕlĭ-lotus.
Mēlŏn (μῆλον), an apple	Mēlŏ, Mēlŏ-cactus; Mēlŏn-gena: Xylo-mēlŭm.
Mĕlŏs (μέλος), a limb, member	Aniso-mĕles, Hetero-mĕles, Octo-mĕles, Tetra-mĕles.
Mĕrĭs, mĕrĭdŏs (μερίς, μερίδος), a part	Actino-mĕrĭs, Hemi-mĕrĭs, Iso-mĕrĭs, micro-mĕrĭs; Crypto-mĕrĭa, Lepto-mĕrĭa; Tetra-mĕrĭŭm.
Mĕsŏs (μέσος), middle	Mĕsŏ-chlæna, mĕsŏ-chloa, mĕsŏ-leucum, Mĕsŏ-spinidium;
Mīcrŏs (μικρός), little	Mīcr-andra, mīcr-antha, Mīcr-anthera; Mīcrŏ-coccus; Mīcrŏ-loma, Mīcrŏ-myrtus: Tetra-mīcra.
Mŏnŏs (μόνος), alone, solitary	mŏn-acantha, mŏn-adelpha, Mŏn-orchis; mŏnŏ-ceras, mŏnŏ-chlamys, Mŏnŏ-chilus, Mŏnŏ-lophus.
Mўcēs, mўcētŏs (μύκης, μύκητος), a mushroom	Choiro-mўcēs, Hypo-mўcēs, Saccharo-mўcēs, Uro-mўcēs; Asco-mўcētes, Disco-mўcētes, Schizo-mўcētes.
Mўrĭŏs (μυρίος), countless	mўrĭ-acantha, Mўrĭ-adenus; Mўrĭŏ-cephalus.
Mўrŏn (μύρον), sweet ointment	Mўrŏ-balanus, Mўrŏ-broma, Mўrŏ-spermum, Mўrŏ-xylon.
Mўs, mўŏs (μῦς, μυός), a mouse	Mўŏ-porum, Mўŏ-seris; Mўŏs-otis, Mўŏs-urus.
Nēma, nēmătŏs (νῆμα, νέματος), a thread	Nēm-aconia; Nēmă-stylis; Nēmŏ-stylis; Nēmăt-anthus; Nēmătŏ-phyllum: Actino-nēma, Cyclo-nēma.
Nĕphrŏs (νεφρός), a kidney	Nĕphr-andra, Nĕphr-anthera; Nĕphrŏ-lepis.
Nŏthŏs (νόθος), bastard, spurious	Nŏthŏ-chlæna, Nŏthŏ-læna, Nŏthŏ-lirion, Nŏthŏ-scordum.
Nŏtŏs (νότος), the South; nŏtĭŏs (νότιος), moist southern	Nŏt-elæa; Nŏtŏ-spartium; Nŏtĭ-ophrys; Nŏtĭŏ-sphace.
Nōtŏs (νῶτος), the back	Nōtŏ-ceras; Nōt-odonta: Spilo-nōta: Lysio-nōtus.
Ŏdous, ŏdŏntŏs (ὀδούς, ὀδόντος), a tooth	Ŏdŏnt-adenia, Ŏdŏnt-arrhena: Ŏdŏntŏ-glossum, Ŏdŏntŏ-loma: ambly-ŏdŏn, Brachy-ŏdŏn, Leont-ŏdŏn.
Ŏlĭgŏs (ὀλίγος), little	Ŏlĭg-antha, Ŏlĭg-osma; Ŏlĭgŏ-scias, ŏlĭgŏ-trichum.
Ŏmphălŏs (ὀμφαλός), the navel	Ŏmphăl-andria, Ŏmphăl-ia; Ŏmphălŏ-bium.
Ŏnŏs (ὄνος), an ass	Ŏnŏ-broma, Ŏnŏ-brychis, Ŏnŏ-pordon, Ŏnŏ-seris.
Ŏnўx, ŏnўchŏs (ὄνυξ, ὄνυχος), a claw	Ŏnўch-ium; Ŏnўchŏ-sepalum: Dipl-ŏnyx, platy-ŏnyx.
Ŏphis, ŏphĭŏs (ὄφις, ὄφιος), a snake	Ŏphĭŏ-caryon, Ŏphĭŏ-desma, Ŏphĭŏ-glossum, Ŏphĭŏ-pogon.
Ŏrnĭs, ŏrnīthŏs (ὄρνις, ὄρνιθος), a bird	Ŏrnīth-idium; Ŏrnīthŏ-cephalus, Ŏrnīthŏ-chilus, Ŏrnīthŏ-galum, Ŏrnīthŏ-pteris; tri-ŏrnīthŏ-phora.
Oura *or* ūra (οὐρα), the tail	Ūrŏ-cystis, Ūrŏ-petalum, Ūrŏ-spatha: Di-ūrĭs, Hippūrĭs: Ather-ūrŭs, Lag-ūrŭs, Myos-ūrŭs, Scorpi-ūrŭs.
Ous, ōtŏs (οὖς, ὠτός), an ear	Ōt-acanthus, Ōt-andra, Ōt-anthus: Ōtŏ-chilus, Ōtŏ-stemma: Arct-ōtĭs, Di-ōtĭs, Leon-ōtĭs.
Ŏxўs (ὀξύς), sharp, acid	Ŏxў-acantha, Ŏxў-cedrus, Ŏxў-dendron, Ŏxў-spora.
Păchўs (παχύς), thick	păchў-antha, Păchў-chilus, Păchў-loma; Păchўs-andra.
Pănax, pănăcŏs (πάναξ, πάνακος), panacea, all-heal	Pănăx: Mono-pănăx, Opo-pănăx, Oreo-pănăx, Pseudo-pănăx.
Pără (παρά), beside, like	Pără-caryum, Pără-gramma, Pără-nomus, Pără-tropia.
Pĕdĭlŏn (πέδιλον), a shoe	Pĕdĭl-anthus, Pĕdĭl-ea; Pĕdĭlŏn-ia.
Pēra (πήρα), a wallet	Pēră-nema: Acro-pēra, Cyrto-pēra.
Pĕrĭ (περί), round	pĕrĭ-acanthus, Pĕrĭ-clymenum. Pĕrĭ-ploca, Pĕrĭ-stylis.
Pĕtălon (πέταλον), a leaf, petal	Pĕtăl-acte: Pĕtălŏ-lepis, Pĕtălŏ-stemon: Deca-pĕtăla: Oxy-pĕtălŭm. Uro-pĕtălŭm. Zygo-pĕtălŭm.
Phĭlŏs (φίλος), fond	Phĭl-adelphus: Phĭlŏ-dendron, Phĭlŏ-gyne: Ægi-phĭla, Chima-phĭla, Nemo-phĭla, Scia-phĭla: Geo-phĭlŭs.
Phlĕps, phlĕbos (φλέψ, φλεβός), a vein	Phlĕbĭ-gonium: Phlĕbĭŏ-phyllum: Eu-phlĕbĭa. Phanerophlĕbĭa; Gonio-phlĕbĭŭm, Hetero-phlĕbĭŭm.

Pronouncing Dictionary—*continued.*

ROOT-WORD.	EXAMPLES OF DERIVATIVES.
Phŏrŏs (*φορός*), bearing, producing	Phŏrŏ-lobus: Adeno-phŏra, Botryo-phŏra; Acro-phŏrŭs, Belo-phŏrŭs; Erio-phŏrŭm, Stephano-phŏrŭm.
Phўllon (*φύλλον*), a leaf	Phўll-achne, Phўll-amphora; Phўllŏ-cactus, Phўllŏ-calyx: Cerato-phўlla; Penta-phўllŏn; Platy-phўllŏs; Podo-phўllŭm; Caryo-phўllŭs.
Phўsa (*φῦσα*), a bladder, bellows	Phўsă-pteris; Phўsŏ-poda, Phўsŏ-spermum: Di-phўsa; Stephano-phўsŭm.
Phўtŏn (*φυτόν*), a plant	Phўt-elephas; Phўtŏ-crene: rhizo-phўta, Xero-phўta; Argyro-phўtŏn; Anoplo-phўtŭm, Chloro-phўtŭm.
Pīlŏs (*πῖλος*), a hat	Pīlĕ-anthus, pīlĕŏ-rhiza; Pīlŏ-carpus, Pīlŏ-phora.
Pĭtўs, Pĭtўŏs (*πίτυς, πίτυος*), a pine-tree	Pĭtў-opsis: Chamæ-pĭtўs, Prumno-pĭtўs, Sciado-pĭtўs.
Plăgĭŏs (*πλάγιος*), oblique	Plăgĭ-anthus; Plăgĭŏ-lirion, Plăgĭŏ-lobium.
Plătўs (*πλατύς*), flat, broad	plătў-acantha, Plătў-chilum, plătў-rhynchos.
Plĕctŏs (*πλεκτός*), twisted	Plĕctŏ-cephalus, Plĕctŏ-gyne, plĕctŏ-lepis: Cheilo-plĕctŏn.
Plēctrŏn (*πλῆκτρον*), a spur	Plēctr-anthera, Plēctr-anthus, Plēctr-itis, Plēctr-urus.
Plŏcē (*πλοκή*), a twining	Plŏcŏ-glottis, Plŏcŏ-stemma: Peri-plŏca; Sym-plŏcŏs.
Pōgōn, pōgōnŏs (*πώγων, πώγωνος*), a beard	Pōgō-gyne; Pōgōn-ia; Pōgōnŏ-pus: Andro-pōgōn.
Pŏlўs (*πολύς*), much, many	pŏlў-acantha, Pŏlў-anthus, Pŏlў-gala, Pŏlў-gonum.
Pŏrŏs (*πόρος*), a passage, ford	Pŏr-anthera; Pŏrŏ-stema: Myo-pŏrŭm; Poly-pŏrŭs.
Pŏrphўrĕŏs (*πορφύρεος*), purple	pŏrphўr-antha; Pŏrphўrŏ-coma, Pŏrphўrŏ-stachys.
Pous or pūs, pŏdŏs (*πούς, ποδός*), a foot	Pŏd-anthus; Pŏdĭ-soma; Pŏdŏ-carpus, Pŏdŏ-phyllum: Brachy-pŏda; Cheno-pŏdĭŭm, Lyco-pŏdĭŭm, Poly-pŏdĭŭm; Corono-pūs, Lago-pūs, Ornitho-pūs.
Prăsŏn (*πράσον*), a leek	Prăs-anthea; Prăsŏ-phyllum: Schœno-prăsŭm.
Psīlŏs (*ψιλός*), bare	Psīla; Psīlŏ-gyne, Psīlŏ-stoma; Psīlŏs-anthus.
Psўchē (*ψυχή*), the soul, a butterfly	Psўchē, Psўche-chilus; Psўchŏ-trophum: Calli-psўchē.
Ptĕrĭs, ptĕrĭdŏs (*πτέρις, πτέριδος*), a fern	Ptĕrĭs; ptĕrĭdĭ-folia: Acino-ptĕrĭs, Acro-ptĕrĭs, Angio-ptĕrĭs, Cysto-ptĕrĭs, Struthio-ptĕrĭs.
Ptĕrŏn (*πτερόν*), a feather, leaf	Ptĕrŏ-carpus, Ptĕrŏ-phyton: Cato-ptĕrŏn; Heli-ptĕrŭm; [Ano-ptĕrŭs.
Ptĕryx, Ptĕrўgŏs (*πτερύξ, πτέρυγος*), a wing	Ptĕrўgŏ-calyx: Tetra-ptĕrўgĭŭm; Tetra-ptĕrўs.
Ptĭlŏn (*πτίλον*), a feather	Ptĭlŏ-cnema, Ptĭlŏ-stephium, Ptĭlŏ-trichum: Acro-ptĭlŏn.
Pўr, pўrŏs (*πῦρ, πυρός*), a fire	Pўr-acantha, Pўr-alis, Pўr-ethrum; Pўrŏ-lirion, Pўrŏ-stegia.
Pўrēn, pўrēnŏs (*πυρήν, πυρῆνος*), a kernel, fruit-stone	[pўrēnum Pўrēnŏ-mycetes: Cato-pўrēnĭum, Endo-pўrēnĭum, mono-
Pўrŏs (*πυρός*), Wheat	Agro-pўrum, Hydro-pўrum, Iso-pўrum, Lepto-pўrum, Melam-pўrum; leuco-pўrus.
Răchis *or* rhăchis, rhăchĭos (*ῥάχις, ῥάχιος*), the back	răchĭ-rhizon: erythro-răchĭs.
Răphís *or* rhăphĭs, rhăphĭdŏs (*ῥαφίς, ῥαφίδος*), a needle	Răphĭ-stemma; răphĭd-acantha; Răphĭdŏ-phora, Rhăphĭdŏ-phora; Răphĭŏ-lepis, Rhăphĭŏ-lepis: Pĕnta-răphĭă, Penta-rhăphĭă.
Rhīs, rhīnos (*ῥίς, ῥινος*), the nose	Rhīn-acanthus; Rhīnŏ-petalum: Antir-rhīnum.
Rhīza (*ῥιζα*), a root	Rhīzŏ-bius, Rhīzŏ-phora: Acantho-rhīza; Glycy-rhīza; Xantho-rhīza; macro-rhīzon; Pachy-rhīzus.
Rhŏdŏn (*ῥόδον*), a rose	Rhŏdŏ-dendron, Rhŏdŏ-rhiza, Rhŏdŏ-thamnus: leuco-rhŏda, melano-rhŏda; Chamæ-rhŏdŏs.
Rīpis *or* rhīpis, rhīpĭdŏs (*ῥιπίς, ῥιπίδος*), a fan	Rīpĭd-ium; Rhīpĭdŏ-dendron, Rhīpĭdŏ-pteris.
Rōps *or* rhōps, rhōpŏs (*ῥώψ, ῥωπός*), a shrub	Chamæ-rōps, Dæmono-rōps. [scăphis.
Scăphē (*σκάφη*), a boat, skiff (Latin, scapha)	Scăpha; scăphĭ-gera; Scăphў-glottis: Loxo-scăpha: Eu-
Scĭas, scĭădŏs (*σκιάς, σκιάδος*), a shade, an umbrella	Scĭădŏ-calyx, Scĭădŏ-phyllum, Scĭădŏ-pitys, Oligo-scĭas.
Sēma *and* sēmeiŏn (*σῆμα and σημεῖον*), a mark	Sēmē-carpus; Sēmei-andra: Brachy-sēma, Erio-sēma; Steno-sēmĭa.
Sĕrĭs (*σέρις*), Succory	Sĕrĭs: Dendro-sĕrĭs, Lago-sĕrĭs, Ono-sĕrĭs.
Sĭdērŏs (*σίδηρος*), iron	Sĭdēr-itis; Sĭdērŏ-dendron, Sĭdērŏ-xylon: Metro-sĭdērŏs.
Sīphōn, sīphōnŏs (*σίφων, σίφωνος*), a reed, tube (Latin, sīpho)	Sīpho, Sīpho-campylos; Sīphōn-andra, Sīphōn-antha; Sīph-ōnŏ-phora: Lepto-sīphōn, Ortho-sīphōn, Physo-sīphōn.
Sītŏs (*σῖτος*), Wheat	Sītŏ-codium, Sītŏ-bolium, Sītŏ-lobium.
Sōlēn, sōlēnŏs (*σωλήν, σωλῆνος*), a pipe	Sōlena; Sōlen-andra, Sōlēn-idium; Sōlēnŏ-phora: Strepto-sōlēn; Steno-sōlēnĭum.
Sōrŏs (*σωρός*), a heap	Sōrŏ-cephalus, Sōrŏ-manes, Sōrŏ-sporium: Odonto-sōrĭa: plesio-sōrum; Allo-sōrŭs, Crypto-sōrŭs, Tricho-sōrus.

Pronouncing Dictionary—*continued.*

Root-word.	Examples of Derivatives.
Spăthē (*σπάθη*), a blade, flower-sheath (Latin, spatha)	Spăth-acea, Spăth-antheum; Spăthĭ-carpa, Spăthĭ-phyllum; Spăthŏ-glottis: Argo-spătha, Brachy-spătha, Rhodo-spătha; Hetero-spăthe, Hyo-spăthe.
Sphēn, sphēnŏs (*σφήν, σφηνός*), a wedge . . .	Sphēn-andra; Sphēnŏ-desma, Sphēnŏ-gyne, Sphēnŏ-toma.
Spīlŏs (*σπῖλος*), a spot	Spīl-anthes; Spīlŏ-nota, spīlŏ-pterum, Spīlŏ-soma.
Spīra *or* speira (*σπεῖρα*), a coil	Spīr-æa, Spīr-anthera; Spīrŏ-conus, Spīrŏ-stemon.
Spŏră (*σπορά*), a seed	Spŏrŏ-bolus: Chori-spŏra, Clado-spŏra; Pitto-spŏrum.
Stăchys, stăchўŏs (*στάχυς, στάχυος*), an ear of corn	Stăchys; Stăchў-urus; Stăchўŏ-pogon: Calli-stăchys, Echino-stăchys, Gymno-stăchys; Lepto-stăchўs; Acantho-stăchўăm, Gymno-stăchĭăm.
Stăphўlē (*σταφυλή*), a cluster of grapes . . .	Stăphўl-ea, Stăphyl-inus: Comaro-stăphўlis; Arcto-stăphўlŏs.
Stĕgē (*στέγη*), a covering	Stĕg-osia: Caly-stĕgia, Cono-stĕgia, Crypto-stĕgia, Leuco-stĕgia, Physo-stĕgia.
Stĕmma, stĕmmătŏs (*στέμμα, στέμματος*), a wreath	Stĕmmăt-ium: Agro-stĕmma, Calli-stĕmma, Crypto-stĕmma, Sarco-stĕmma.
Stēma, stēmătŏs (*στῆμα, στήματος*), *and* Stēmōn, stēmŏnos (*στήμων, στήμονος*), } the warp, a stamen	Stēmōn-a. Stemōn-acanthus: Centro-stema, micro-stema; ampho-stemon, Cyclo-stemon, Pent-stemon, Steno-stēmŭm.
Stĕnŏs (*στενός*), narrow	Stĕno-carpus, Steno-chilus, Steno-glossum, Steno-loma, Stĕnŏ-rhynchus.
Stĕphŏs (*στέφος*), *and* Stĕphănē (*στεφάνη*) } a crown	Stĕphăn-andra; Stĕphănŏ-coma, Stĕphănŏ-lirion: Andro-stĕphium. Ptilo-stĕphĭum; Calli-stephus. A-stĕphănus.
Stĭchŏs (*στίχος*), a row, line	Stĭchŏ-neuron: Acro-stĭchŭm, Di-stĭchŭm, Poly-stĭchŭm.
Stŏma, stŏmătŏs (*στόμα, στόματος*), the mouth .	Adeno-stŏma, Chæno-stŏma, Mela-stŏma, Pachy-stŏma.
Strŏbĭlŏs (*στρόβιλος*), a fir-cone (Latin, strobĭlus)	Strŏbĭla; Strŏbĭl-anthes; Strŏbĭlŏ-rachis.
Strŏbŏs (*στρόβος*), a top [cone] (Latin, strobus)	Strobus; Strobo-clinium; Actino-strobus, Glypto-strobus.
Stўlŏs (*στῦλος*), a pillar, style	Stўl-andra, Stўl-urus; Stўlŏ-coryne, Stўlŏ-lepis: Bulbo-stўlis, Crypto-stўlis, Micro-stўlis, Peri-stўlis.
Sўrĭnx, sўrĭngŏs (*σῦριγξ, σύριγγος*), a pipe . .	Sўrĭnga; sўrĭng-ella, Sўrĭng-odea; sўringi-toma; sўrĭngŏ-thyrsis.
Thēcē (*θήκη*), a case, sheath (Latin, thēca) . .	Thēcŏ-stele: Anoma-thēca, Arcto-thēca, Gymno-thēca, Hetero-thēca, Platy-thēca.
Thēlē (*θηλή*), a teat	Thēla; Thēlĕ-bolos, Thēlĕ-phora, Thēlĕ-sperma: phymato-thele, Sphæro-thele.
Thēlўs (*θῆλυς*), female	Thēlў-gonum, Thēlў-mitra, Thelў-pogon, Thelў-pteris.
Thrĭx, trĭchŏs (*θρίξ, τρίχος*), hair	Thrĭx-spermum; Trich-antha: Tricho-cephalus, Tricho-manes: Acro-trĭche, caili-tricha; Eri-trichum; Poly-trĭchŭm; oligo-trĭchŭm; Lepto-thrix, Poly-thrĭx.
Tŏmē (*τομή*), a cut	Calyco-tŏme, Hetero-tŏma, Iso-tŏma, Peri-toma, Spheno-tŏma: Bu-tomus.
Trāchўs (*τραχύς*), rough	Trāchў-carpus, Trachy-mene, Trachy-notia, Trachy-stemon.
Trăgŏs (*τράγος*), a he-goat	Trăg-ia, Trăg-acantha, Trăg-us; Trăgŏ-pogon.
Trŏpĭs, trŏpĭdŏs (*τρόπις, τρόπιδος*), a keel . . .	Trŏpid-ia: Calo-trŏpis, Iso-trŏpis, Macro-trŏpis, Oxy-trŏpis.
Tўlŏs (*τύλος*), a knot	Tўlŏ-chilus, Tўlŏ-glossa, Tўlŏ-phora.
Xērŏs (*ξηρός*), dry	Xēr-andra, Xēr-anthemum; Xērŏ-nema, Xero-phyllum, Xērŏ-phyta.
Xĭphŏs (*ξίφος*), a sword	Xĭph-idium, Xĭph-ion, Xĭphŏ-pteris, Xiphi-stachys; Dictyo-xĭphĭŭm.
Xўlŏn (*ξυλόν*), wood	Xўl-acantha; Xўlŏ-bium, Xylo-nĕum, Xylo-phylla; Capro-xўlŏn, Chloro-xўlŏn, Hæmato-xylum, Sidero-xўlŏn; Cithare-xўlŭm, Xantho-xylum.
Zēmĭa (*ζημία*), loss (Latin, Zāmia)	Zāmĭa; Zāmĭŏ-culcas: Cerato-zamia, Macro-zamia, Platy-zamĭa.
Zōstēr, zōstērŏs (*ζωστήρ, ζωστῆρος*), a belt . .	Zōstĕra: zostera-folia; Zostero-sperma, Zostera-stoma.
Zўgŏn (*ζυγόν*), a yoke	Zўg-adenus: Zygo-glossum, Zygo-petalum, Zygo-phyllum; Tetra-zygia.

Pronouncing Dictionary—*continued.*

BIBLIOGRAPHY

Of Works used for the Derivation and Accentuation of Generic and Specific Names.

This Bibliographical List contains the titles of works useful for the study of plant-names; most of them fall under the following heads:—

(1) Books in which we find the old classical names of plants, such as those of the ancient authors Theophrastus, Virgil, Pliny, and the moderns Fraas, Sprengel, Lenz, &c.

(2) Those of writers who supply information on the so-called barbarous native names, such as Aublet and Seemann for American names; Siebold and Kaempfer for Japanese; Bretschneider for Chinese, &c.

(3) The books which afford particulars as to commemorative names and the lives of the men thus honoured—*see* Haller, Böhmer, Pritzel, &c.

(4) General works which give the derivation and pronunciation of botanical names. Some of these may be found under the names Wittstein, Glaser, Paxton, Loudon.

(5) National Floras, which are authorities especially for names commemorative of men belonging to the respective nations, as for England, Withering and Hooker; Germany, Koch; Italy, Arcangeli; Sweden, Nyman.

(6) Treatises dealing with the special pronunciation of Latin, as advocated in this Dictionary. A few of these, though not connected directly with botany, have been inserted for convenience of reference—Ellis, Haldeman, Roby, Smith, Kennedy.

It has not been thought worth while to mention the authorities for the comparatively few zoological names (principally those of insects) which occur in the Dictionary.

Some of the works enumerated have been but little used; but all of them have been consulted more or less. The edition actually used has been named in every case; but that is also generally the latest. In order to ascertain the original etymology, reference has been made, in very numerous instances, to the work in which the author originally published the name; but of course the titles of such publications have not been inserted in the list, as doing so would have many times multiplied its present size. For the rare works which were not in the writer's own library, recourse has been had to the admirable Botanical Library in the Natural History Department of the British Museum at South Kensington, to which free access was permitted, and much assistance rendered, through the courtesy of Mr. Carruthers and Mr. Britten.

Adams (Francis). Names of all the Plants, &c., described by the Greek authors. *See* **Dunbar.**

Alcock (Randal H.). Botanical Names for English Readers. London, 1876. 8vo.

A very interesting and suggestive book; several mistaken accents were corrected in a page appended to a reprint.

Apuleius Platonicus, de Veribus Herbarum (2nd title "De Herbarum Virtutibus"). Parisiis, 1543. 8vo.

Arcangeli (Giov.). Compendio della Flora Italiana. Torino, 1882. 8vo.

The derivations of all generic names are given, and they, as well as the specific names, are accented.

Aristoteles. Phytologiæ Aristotelicæ, ed. F. Wimmer. 1838. 8vo.

Aublet (J. B. C. F.). Histoire des Plantes de la Guiane Française. Londres et Paris, 1775. 4 vols. 4to.

Bailly (Anatole). *See* **Bréal and Bailly.**

Bauhin (Caspar). Pinax Theatri Botanici. Basiliæ, 1623. 4to.

Böhmer (G. R.). Commentatio Botanico-literaria de Plantis in memoriam Cultorum nominatis. Lipsiæ, 1799. 8vo.

There is an interesting interleaved copy of a previous edition in the Library of the Botanical Department of the British Museum.

—— Lexicon Rei Herbariæ Tripartitum. Lipsiæ, 1802.

The first of the three parts is an "Etymologia Nominum."

Boulger (G. S.). *See* **Britten and Boulger.**

Bréal (Michel) and Bailly (Anatole). Dictionnaire Etymologique Latin. Paris, 1885. 8vo.

Bretschneider (Ernest). On the Study and Value of Chinese Botanical Works. Foochoo, 1870. 8vo.

—— Botanicon Sinicum. London, 1882. 8vo.

Notes on Chinese botany.

—— Early European Researches into the Flora of China. Hanghai, 1881. 8vo.

These three works are of great value for Chinese native names.

Pronouncing Dictionary—*continued.*

Britten (**James**). *See* **Turner.**

—— and **Boulger** (**G. S.**). Biographical Index of British and Irish Botanists (now [1888] appearing in the Journal of Botany).

This work, when completed, will be of great value for all names commemorative of English botanists.

Brown (**N. E.**). Supplement to Johnson's "Gardeners' Dictionary." London, 1884. 8vo.

—— Index to "English Botany." London, 1886. 8vo.

Bucholz (**E.**). Die Homerischen Realien. Leipzig, 1871, &c. 8vo.

Cato (**M. Porcius**). De Re Rustica. *See* **Rusticæ Rei Scriptores.**

Curtius (**Georg.**). Grundzüge der Griechischen Etymologie. Leipzig. Ed. 4, 1873. 8vo.

Diefenbach (**L.**). Novum Glossarium Latino-Germanicum Mediæ et Infimæ Ælatis. Frankfort, 1867. 8vo.

Dierbach (**J. H.**). Die Arzneimittel des Hippokrates. Heidelberg, 1824. 8vo.

Diez (**F.**). Lexicon Etymologicum Linguarum Romanorum. Bonn, 1853. 8vo.

Dioscorides. De Materia Medica. Ed. C. Sprengel. Lipsiæ, 1828-30. 2 vols. 8vo.

Du Cange (**Dufresne, Seigneur**). Glossarium ad Scriptores Mediæ et Infimæ Latinitates. Ed. L. Favre. Niort et Londini, 1882-87. 10 vols. 4to.

Special lists of herbs, trees, &c., in Vol. X.

Dunbar (**George**). Greek-English Lexicon. London and Edinburgh. Ed. 3, 1850.

Valuable scientific Appendix by Francis Adams.

Earle (**John**). English Plant-Names from the Tenth to the Fifteenth Century. Oxford, 1880. 8vo.

Contains several Latin Glossaries.

Ellis (**A. J.**). Practical Hints on the Quantitative Pronunciation of Latin. London, 1874. 8vo.

Eucholz (**J. B.**). Flora Homerica. Culm., 1848. 4to.

Fée (**Ant. L. A.**). La Botanique de Pline. Paris, 1833. 3 vols. 8vo.

Fick (**F. C. A.**). Vergleichendes Wörterbuch der Indogermanischen Sprachen. Göttingen, 1874-76. 4 vols. 8vo.

Fraas (**C.**). Synopsis Plantarum Floræ Classicæ. München, 1845. 8vo.

Frank (**A. B.**). *See* **Leunis.**

Gerard (**J.**). Herball. London. Ed. 2, by Thos. Johnson, 1633. Fol.

Glaser (**L.**). Taschenwörterbuch für Botaniker. Leipzig, 1885. 8vo.

Gray (**Asa**). Manual of the Botany of the Northern United States. New York and Chicago. Ed. 5, 1872.

Gives derivations of genera, and pronunciation of genera and species.

Haldeman (**S. S.**). Elements of Latin Pronunciation for the use of Students in . . . Zoology, Botany, &c. Philadelphia, 1851. 12mo.

Haller (**Albertus**). Bibliotheca Botanica. Londini, 1771. 2 vols. 4to.

Hehn (**Victor**). Wanderings of Plants and Animals from their First Home. Ed. by J. S. Stallybrass. London, 1885. 8vo.

Many erudite notes tracing the derivations of plant-names.

Heldreich (**T. von**). Die Nutzpflanzen Griechenlands. Athen., 1862. 8vo.

Hemsley (**W. B.**). Handbook of Hardy Trees, Shrubs, and Herbaceous Plants. London, 1877. 8vo.

Much care bestowed on derivations and accentuation.

Henfrey (**Arthur**). *See* **Smith.**

Homer. *See* **Bucholz** and **Eucholz.**

Hooker (**Sir J. D.**). The Student's Flora. London, Ed. 3, 1884. 8vo.

The later editions have had the derivations and accents carefully revised.

Hooker (**W. J.**) and **Arnott** (**G. A. W.**). British Flora. London, Ed. 6, 1850.

The derivations given are often very inaccurate.

Pronouncing Dictionary—*continued.*

Jackson (**B. Daydon**). Guide to the Literature of Botany. London, 1881. 4to.

Exhaustive Index, very helpful for working out commemorative names.

Juillet. *See* **Lecoq et Juillet.**

Jürgens (**Karl**). Etymologisches Fremdwörterbuch der Pflanzenkunde. Braunschweig, 1878. 8vo.

Kæmpfer (**E.**). Amœnitates Exoticæ. Lemgoviæ, 1712. 4to.

Kennedy (**B. H.**). The Public School Latin Grammar. London. Ed. 4, 1876. 8vo.

Kirchner (**Oskar**). Die Botanischen Schriften des Theophrast. Leipzig, 1874. 8vo.

Several useful lists of names.

Koch (**G. D. J.**) Synopsis Floræ Germanicæ et Helveticæ. Ed. 3. Lipsiæ, 1857. 8vo.

Most of the generic names accented.

Koch (**K.**). Die Bäume und Sträucher des alten Griechenlands. Stuttgart, 1879. 8vo.

Langkavel (**B.**). Botanik der Spätern Griechen. Berlin, 1866. 8vo.

Lecoq (**H.**) et **Juillet** (**J.**). Dictionnaire Raisonné des Termes de Botanique. Paris, 1831. 8vo.

Lenz (**H. O.**). Botanik der alter Griechen und Römer. Gotha, 1859. 8vo.

Leunis (**J.**). Synopsis der Pflanzenkunde. Ed. 3, by A. B. Frank. Hannover, 1885. 3 vols. 8vo.

Lewis (**C. T.**) and **Short** (**C.**). Latin Dictionary. Oxford, 1879. 4to.

The etymological part is superior to that of any other Latin-English Dictionary.

Liddell (**H. G.**) and **Scott** (**R.**). A Greek-English Lexicon. Oxford, 1883. 4to.

This standard Greek Lexicon is very meagre in its botanical references.

Lindley (**J.**). *See* **Loudon** and **Paxton.**

Linnæus (**C.**). Critica Botanica. Lugduni Batavorum, 1737. 8vo.

—— Philosophia Botanica. Holmiæ, 1751. 8vo.

These two works contain a great mass of information concerning the derivation of the Linnean names for genera and species.

Loudon (**J. C.**). Encyclopædia of Plants. London, 1829. 8vo.

"Professor Lindley . . . prepared the derivations and accentuations."—*Preface.*

—— Hortus Britannicus. London, Ed. 3, 1839. 8vo.

Macer. "De Viribus Herbarum" and Strabo's "Hortulus." Lugdun., 1530. 12mo.

MacNicoll (**D. H.**). Dictionary of Natural History Terms. London, 1863.

Maigne d'Arnis (**W. H.**). Lexicon Manuale ad Scriptores Mediæ et Infimæ Latinitatis. Paris, 1866. 8vo.

Martyn (**Thos.**). The Language of Botany. London, 1793. 8vo.

Meyer (**E. H. F.**). Geschichte der Botanik. Königsberg, 1854-7. 4 vols. 8vo.

Very full in the earlier parts.

—— Botanische Erläuterungen zu Strabo's Geographis.

Müller (**F. Max**). Biographies of Words and Primitive Home of the Aryas. London, 1887. 8vo.

Interesting Aryan plant-lists.

Müller (**J. B.**). Botanische prosodische Wörterbuch. 1842.

Nemnich (**P. A.**). Allgemeines Polyglotten—Lexicon der Naturgeschichte. Leipzig, 1793-8. 4 vols. 4to.

Nyman (**C. F**). Svensk Fanerogam-Flora. Oerebro, 1873. 8vo.

Generic and specific names accented.

Paxton (**Jos.**). Pocket Botanical Dictionary. London. 1840. 8vo.

"The accentuation-marks . . . all supplied by the first botanist in England, Dr. Lindley."—*Preface.*

Pfeiffer (**L.**). Nomenclator Botanicus. Cassellis, 1872-4. 2 vols. 4to.

Contains many brief etymologies, inserted apparently on no settled principle.

Pronouncing Dictionary—*continued.*

Phillips (**L. B.**). Dictionary of Biographical Reference, containing 100,000 names. London, 1871. 8vo.

Pickering (**C.**). Chronological History of Plants. Boston, 1879. 8vo.

An immense mass of information, but the index of foreign plant-names is quite inadequate.

Pictet (**Ad.**). Les Origines Indo-Européennes, ou les Aryas Primitifs. Paris. Ed. 2, 1878. 3 vols.

Special attention is paid to ancient names of plants.

Piddington (**H.**). English Index to the Plants of India. Calcutta, 1832. 8vo.

Plinius Secundus (**C.**). Historia Naturalis. D. Detlefsen recensuit. Berol., 1866-82. 8vo.

—— [**Pline**]. *See* **Fée.**

—— [**Pliny**]. Natural History. Translated by J. Bostock and H. T. Riley. London, 1855. 6 vols. 8vo.

Many notes on botanical matters, largely copied from Fée and Sprengel.

Prior (**R. C. A.**). Popular Names of British Plants. London. Ed. 3, 1879. 8vo.

Treats incidentally of the etymology of many scientific names.

Pritzel (**G. A.**). Thesaurus Literaturæ Botanicæ. Lipsiæ. Ed. 2, by Jessen. 1872-7. 4to.

The great authority for commemorative names.

Promptorium Parvulorum, Lexicon Anglo-Latinum princeps. London, 1843-65. 3 vols. 4to.

Räuschel. Nomenclator Botanicus Omnium a Linnæo Descriptarum Plantarum. Lipsiæ, 1797. 8vo.

Roby (**H. J.**). A Grammar of the Latin Language, from Plautus to Suetonius. Part I. London. Ed. 5, 1887. 8vo.

Roxburgh (**W.**). Flora Indica. Serampore, 1832. 3 vols. 8vo.

Rusticæ Rei Scriptores Veteres Latini. Lipsiæ, 1794-97. 7 vols. 8vo.

Contains Cato, Varro, Columella, &c., with very copious "Index Rerum et Vocabulorum."

Saalfeld (**G. A. E. A.**). Tensaurus Italo-Græcus. Wien., 1884. 8vo.

A very full list of Latin words borrowed from Greek, including a large number of plant-names.

Saint-Lager (**Dr.**). Reforme de la Nomenclature Botanique. Lyon, 1880. 8vo.

Attaches much importance to the Greek words from which most generic names are derived.

Salomon (**Carl**). Wörterbuch der Botanischen Kunstsprache. Stuttgart, 1886. 12mo.

—— Wörterbuch der Botanischen Gattungsnamen. Stuttgart, 1887. 12mo.

These two little books, the last German publications dealing with the subject, give the accentuation of many specific and generic names, but very incorrectly.

Seemann (**Berthold**). Die Volksnamen der Amerikanischen Pflanzen. Hannover, 1851. 8vo.

Only a fragment of the work projected.

Siebold (**Ph. Fr. de**). Flora Japonica. Lugdun. Batavorum, 1835 and 1870. 2 vols. Fol.

Skeat (**W. W.**). Etymological Dictionary of the English Language. Oxford. Ed. 2, 1884. 4to.

Clears up many doubtful derivations.

Pronouncing Dictionary—*continued.*

Smith (**W.**). Latin-English Dictionary.

The botanical portion was specially prepared by Professor Arthur Henfrey.

—— and **Hall** (**T. D.**). The Student's Latin Grammar. London. Ed. 13, 1885. 8vo.

Sprengel (**Curt.**). Historia Rei Herbariæ. Amsteld., 1807. 2 vols. 8vo.

The first volume, with its valuable indexes, has been of great service.

Strabo. *See* **Meyer.**

Strabo (**Walafrid**). *See* **Macer.**

Théis (**Alex. de**). Glossaire de Botanique, ou Dictionnaire Etymologique. Paris, 1810. 8vo.

A very interesting book, dealing with the derivations of specific as well as generic names. It has been freely quarried from by subsequent writers on the subject.

Theophrasti Opera. Ed. F. Wimmar. Paris, 1866. 8vo.

A very useful edition, with Index containing the views of Sprengel, Fraas, and Fée on the identification of Theophrastus' plants.

Turner (**W.**). The Names of Herbes [A.D. 1548]. Ed. James Britten. London, 1881. 8vo.

Easily consulted by means of the thorough indexes appended by the editor.

Vaničck (**Alois**). Etymologisches Wörterbuch der Lateineschen Sprache. Leipzig, 1874. 8vo.

—— Griechisch-Lateinisches Etymologisches Wörterbuch. Leipzig, 1877-78. 2 vols. 8vo.

Varro (**Ter.**). De Re Rustica. *See* **Rusticæ Rei Scriptores.**

Virgil. *See* **Fée** and **Rubiani.**

Virgiliis Opera. Ed. J. B. Greenough. Boston, 1882. 8vo.

Contains a special Glossary of the plants mentioned by Virgil.

Walafrid Strabo. *See* **Macer.**

Watson (**J. Forbes**). Index to the Native and Scientific Names of Indian Plants. London, 1868. 4to.

Wharton (**E. R.**). Etyma Græca. London, 1882. 8vo.

Gives the correct etymology of many old Greek plant-names.

White (**J. T.**) and **Riddle** (**J. E.**). Latin-English Dictionary. London. Ed. 4, 1872. 2 vols. 8vo.

Very copious, but with many unsound etymologies.

Withering (**Wm.**). Systematic Arrangement of British Plants. Birmingham. Ed. 5, 1812. 4 vols. 8vo.

Gives special rules for pronunciation, and accentuates both genera and species throughout.

Wittstein (**G. C.**). Etymologisch-botanisches Handwörterbuch. Ausbach, 1852. 8vo. ("Editio 2, 1856, non differt."—*Pritzel.*)

The most valuable foreign authority for the derivation of generic names.

Wright (**T.**). Anglo-Saxon and Old English Vocabularies. Ed. 2, by R. P. Walcker. London, 1884. 2 vols. 8vo.

Yeats (**J.**). Natural History of Raw Materials of Commerce. London. Ed. 2, 1887. 8vo.

Appendix of native names.

AN INDEX TO

HERBACEOUS PLANTS FOR SPECIAL PURPOSES.

TO obviate the necessity of looking through the whole of the DICTIONARY OF GARDENING in order to make a selection of herbaceous plants suitable for any special purpose, lists are here given of subjects which are adapted to various situations, or are good for particular purposes.

Very few plants except those which have been distinguished in the body of this work by an asterisk as specially desirable are included hereunder; the exceptions being those which, though perhaps not the best of the species, are yet very useful for the purpose indicated. Orchids, Ferns, Lycopods, and Succulents (with the exception of some of the dwarf rockery plants, *e.g.*, Sedums and Sempervivums) are not included here, but are separately classified further on in the Supplement.

Whether the plant is especially useful for its flowers, fruit, or foliage is shown by the descriptive letters which follow the name. In order to avoid a multiplicity of abbreviations, the different tints of the flowers have been grouped, *e.g.*, vermilion, scarlet, and carmine are described as red (*r*), and rose-colour included with pink (*pi*), while all shades of yellow are simply denoted by *y*. For more detailed information as to colours of flowers, the reader is referred to the classification given further on in this volume. Where blossoms exhibit an admixture of two or more colours, the prevailing or ground colour is placed first.

Thus it will be seen that if a reader wish to make a selection of suitable plants for a special purpose he has ready to his hand such an index as will enable him to complete his work with the least possible trouble and with a certainty that the result will be satisfactory.

The following are the abbreviations used in this division:

aq, aquatic; *b*, blue; *bk*, black; *br*, brown; *c*, cream; *c-h*, cool house; *fl*, flowers; *fol*, foliage; *fr*, fruits; *g*, green; *gl*, glaucous; *gy*, grey; *i-h*, intermediate house; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *s-aq*, semi-aquatic; *sc*, scented; *si*, silvery; *st*, stove; *v*, violet; *w*, white; *y*, yellow.

BOGS AND WATER.—Under this heading are included a good selection of herbaceous plants that require to be grown in water, or to be planted in marshy or boggy situations. They are classified according to hardiness and duration; and aquatics (those which grow in water) and semi-aquatics (subjects requiring damp soil or a marshy situation, or to grow on the margins of lakes

Bogs and Water—*continued.*

or streams) are further distinguished by the abbreviations *aq* and *s-aq*.

Hardy.—ANNUALS.—**Malcolmia maritima** (*s-aq*, *fl l*, *pi*, *r*, or *w*); **Samolus Valerandi** (*aq*, *fl w*); **Saxifraga Cymbalaria** (*s-aq*, *fl y*); **Trapa natans** (*aq*, *fr*; *fol g*); T. verbanensis (*aq*, *fr*; *fol g*),

Bogs and Water (Hardy)—*continued.*

BIENNIAL.—Sabbatia calycosa (*s-aq, fl w*).

PERENNIALS.—Acorus Calamus (*aq, fol y* and *g* striated); A. gramineus (*aq, fol g*); A. g. variegatus (*aq, fol g*, striped *w*); Alisma natans (*aq, fl w*); A. Plantago (*aq, fl pi*); Anagallis tenella (*s-aq, fl pi*); Anemone rivularis (*s-aq, fl w, p* anthers); A. virginiana (*s-aq, fl p* or *p-g*); Aponogeton distachyon (*aq, fl w, sc*); Arnica foliosa (*s-aq, fl y*); Asclepias incarnata (*s-aq, fl r* or *p*); Astilbe rivularis (*s-aq, fl y-w* or *r*); Astrantia carniolica (*s-aq, fl w*; *fol g*, tinged *r*); A. helleborifolia (*s-aq, fl pi*); A. major (*s-aq, fl pi*); Butomus umbellatus (*aq, fl pi*); Calla palustris (*aq, fl w*); Caltha leptosepala (*s-aq, fl w*); C. palustris (*s-aq, fl y*); C. p. biflora (*s-aq, fl y*); C. p. parnassifolia (*s-aq, fl y*); C. radicans (*s-aq, fl y*); Cardamine pratensis (*s-aq, fl p* or *w*); Carex pseudo-cyperus (*s-aq, fl*); C. riparia (*s-aq, fl*); Corydalis solida (*s-aq, fl p*); Cyperus longus (*s-aq, fol g*); Diphylleia cymosa (*s-aq, fl w*); Heteranthera limosa (*s-aq, fl v-b*); Hottonia palustris (*aq, fl l, y* eye); Iris lævigata (*s-aq, fl p*, blotched *y*); I. Pseudo-acorus (*s-aq, fl y, o*, and *g*); Juncus lætevirens (*s-aq, fol g*); Limnanthemum nymphæoides (*aq, fl y*); Lysimachia atropurpurea (*s-aq, fl p*); L. barystachys (*s-aq, fl w*); L. ciliata (*s-aq, fl y*); L. clethroides (*s-aq, fl w*); L. punctata (*s-aq, fl y*); L. vulgaris (*s-aq, fl y*); Lythrum Salicaria (*s-aq, fl r-p*); Mimulus cardinalis (*s-aq, fl r*); M. Lewisii (*s-aq, fl pi*); M. moschatus (*s-aq, fl w*); Myosotis palustris (*s-aq, fl b, y* throat); Nuphar advena (*aq, fl y, r* anthers); N. luteum (*aq, fl y, sc*); Nymphæa alba (*aq, fl w*); N. a. rosea (*aq, fl pi*); N. odorata (*aq, fl w*, tinged *pi, sc*); N. pygmæa (*aq, fl w, sc*); Podophyllum Emodi (*s-aq, fl w, fr r*); Polygonum sachalinense (*s-aq, fl g-y*); Pontederia cordata (*aq, fl b* or *w*; *fol g*); Primula involucrata (*s-aq, fl c-w, y* eye); P. i. Munroi (*s-aq, fl w, y* eye, *sc*); P. luteola (*s-aq, fl y*); Sagittaria heterophylla (*s-aq, fl w*); S. sagittifolia (*aq, fl w, p* claws); Scirpus lacustris (*aq, fl br*); S. Tabernæmontani zebrinus (*s-aq, fol w* and *g*); Typha angustifolia (*aq, fl br*).

Half-Hardy.—ANNUAL.—Vallisneria spiralis (*aq, fl w*; *fol g*).

PERENNIAL.—Thalia dealbata (*aq, fl p*; *fol g*).

Tender.—ANNUALS.—Euryale ferox (*st, aq, fl v*; *fol g*); Tytonia natans (*st, aq, fl r, w*, and *y*); Victoria regia (*st, aq, fl w*, and *p* or *pi*; *fol g*).

PERENNIALS.—Actinocarpus minor (*c-h, aq, fl w*); Aponogeton spathaceum junceum (*c-h, aq, fl pi*); Cabomba aquatica (*i-h, aq, fl y*); Eichhornia azurea (*st, aq, fl b*; *fol g*); E. crassipes (*st, aq, fol g*); Limnocharis Plumieri (*i-h, aq, fl y*); Nelumbium luteum (*c-h, aq, fl y, sc*; *fol b-g*); N. speciosum (*c-h, aq, fl w*, tipped *pi, sc*; *fol g*); Nymphæa Devoniensis (*st, aq, fl pi-r*); N. Lotus (*st, aq, fl r* or *w*) and var.; N. scutifolia (*i-h, aq, fl b, sc*); N. stellata (*st, aq, fl b, sc*) and vars.; N. Sturtevantii (*st, aq, fl pi*); N. thermalis (*st, aq, fl w, sc*); Ottelia ovalifolia (*st, aq, fl g* and *y*); Ouvirandra fenestralis (*st, aq, fl g-w*); Papyrus antiquorum (*c-h, aq*, stems and *fol*); Pistia Stratiotes (*st, aq, fol g*); Sagittaria montevidensis (*i-h, aq, fl w*, spotted *r*); Scirpus riparius (*c-h, s-aq, fl br*); Villarsia parnassifolia (*c-h, s-aq, fl y*; *fol g*); V. reniformis (*c-h, s-aq, fl g*; *fol g*).

BORDERS.—Under this heading are given lists of the most desirable herbaceous plants for the open Border. These lists are intended to assist anyone in rapidly selecting plants which are likely to give satisfaction in the general garden. After making what appears to be a suitable selection, the reader will, of course, turn to the body of the Dictionary for fuller information respecting the plants chosen. The colours of the flowers are indicated, as upon that a selection so much depends. Everyone who has a garden will therefore find this section of "Plants for Special Purposes" exceedingly useful.

Hardy.—ANNUALS.—Acroclinium roseum (*fl pi*); A. r. album (*fl w*); A. r. grandiflorum (*fl pi*); Adonis æstivalis (*fl r*); A. autumnalis (*fl r*); Agrostemma cœli-rosa (*fl pi, w*, or *p*); A. c.-r. fimbriata (*fl p*); Agrostis nebulosa (*fl*);

Borders (Hardy Annuals)—*continued.*

A. pulchella (*fl*); Amarantus caudatus (*fl p*); Anagallis grandiflora (*fl r, b*, &c.); Argemone albiflora (*fl w*); A. hirsuta (*fl w*); A. ochroleuca (*fl y*); Asperula orientalis (*fl b*); Bartonia albescens (*fl y*); B. aurea (*fl y*); Blumenbachia insignis (*fl w*); Borago longifolia (*fl b*); B. officinalis (*fl b, p*, or *w*); Calandrinia grandiflora (*fl p-r*); C. Menziesii (*fl pi*); Calendula maderensis (*fl o*); C. officinalis (*fl o*); Callistephus chinensis (*fl p*, &c.); Centaurea Cyanus (*fl p* and *b*); C. suaveolens (*fl y, sc*); Centranthus macrosiphon (*fl r* or *w*); Cerinthe major (*fl y* and *p*); C. minor (*fl y*, or spotted *br*); C. retorta (*fl y* and *v*); Chlora perfoliata (*fl y*); Chrysanthemum carinatum (*fl w, p*); C. coronarium (*fl y*); C. segetum (*fl y*); C. s. grandiflorum (*fl y*); Clarkia elegans (*fl r*); C. pulchella (*fl p*); Collinsia bicolor (*fl w* and *pi-p*); C. grandiflora (*fl p* and *b*); C. verna (*fl w* and *b*); Collomia coccinea (*fl r*); C. grandiflora (*fl r-y*); Convolvulus tricolor (*fl y, b*, and *w*); Coreopsis Drummondi (*fl y*, banded *r-br*); C. tinctoria (*fl y*, blotched *p-br*); Crepis rubra (*fl r*); Delphinium Ajacis (*fl b, r*, or *w*); D. cardinale (*fl r* and *y*); Downingia pulchella (*fl b, y* eye); Erysimum Perofskianum (*fl o-y*); Eucharidium concinnum (*fl l-p*); Fedia Cornucopiæ (*fl r*); Gaillardia amblyodon (*fl r*); Gilia achilleæfolia (*fl p-b, w*, or *r*); G. androsacea (*fl l, p*, or *w, y* or dark throat); G. capitata (*fl b*); G. densiflora (*fl l*, or nearly *w*); G. liniflora (*fl w*); G. micrantha (*fl pi*); G. m. aurea (*fl y*); G. tricolor (*fl o-y, p*, and *w*) and vars.; Glaucium phœniceum (*fl r*, spotted *bk*); Helianthus annuus (*fl* variable, usually *y*); Heliotropium convolvulaceum (*fl w, sc*); Hordeum jubatum (*fl*); Iberis coronaria (*fl w*); I. umbellata (*fl* variable, usually *p*); Impatiens amphorata (*fl p, r*, and *pi*); I. Roylei (*fl p*); Lathyrus grandiflorus (*fl pi*); L. odoratus (*fl* variable, *sc*); Limnanthes Douglasii (*fl y*, passing to *w*, streaked *gy, sc*); Linaria bipartita (*fl v-p, o*, and *w*); L. reticulata (*fl p* and *y*); L. spartea (*fl y*); Linum grandiflorum (*fl pi*); L. g. rubrum (*fl r-pi*); Loasa Pentlandii (*fl o*); L. prostrata (*fl y*); L. vulcanica (*fl w*); Lupinus luteus (*fl y, sc*); L. nanus (*fl l* and *b*); Madia elegans (*fl y*); Malcolmia maritima (*fl l, pi, r*, or *w*); Malope trifida (*fl p* or *w*); Matricaria inodora flore-pleno (*fl w*); Mimulus luteus (*fl y*); M. l. cupreus (*fl r* or *r-br*); Moricandia arvensis (*fl v*); M. sonchifolia (*fl v-b*); Nemesia cynanchifolia (*fl l-b*); N. floribunda (*fl w* and *y, sc*); Nemophila insignis (*fl b, w* eye, &c.) and vars.; N. maculata (*fl w*, blotched *v-p*); N. Menziesii (*fl w*, varying to *b*) and vars.; Nicandra physaloides (*fl b*); Nigella damascena (*fl w* or *b*); N. hispanica (*fl b, r* stamens); N. orientalis (*fl y*, spotted *g*); Nolana lanceolata (*fl b, w, g*); N. paradoxa (*fl*); N. tenella (*fl b*); Nonnea rosea (*fl pi, y-w* throat, or *b*); Œnothera amœna (*fl pi*, spotted *r*); Œ. a. rubicunda (*fl l-p*, blotched); Œ. bistorta Veitchiana (*fl y*, spotted *r*); Œ. Whitneyi (*fl pi-r, w*, &c.); Oxalis valdiviensis (*fl y*, streaked *r*); Panicum capillare (*fl*); P. miliaceum (*fl*); Papaver Hookeri (*fl pi* to *r*, blotched *w* or *b-bk*); P. Rhœas (*fl r*) and vars.; P. somniferum (*fl* variable); Phacelia campanularia (*fl b*, spotted *w*); P. viscida (*fl b, p*); P. Whitlavia (*fl b*); Podolepis aristata (*fl y*); Polygonum orientale (*fl pi-p* or *w*); Reseda odorata (*fl y-w*, &c., *sc*); Sabbatia campestris (*fl pi*); Saponaria calabrica (*fl pi*); Scabiosa atropurpurea (*fl r*) and vars.; Schizanthus pinnatus (*fl v* or *l*, and *y*, &c.) and vars.; Sedum cœruleum (*fl b*; *fol g*, spotted *r*); Silene Atocion (*fl w*); S. pendula (*fl pi*); S. p. compacta (*fl pi*); Silybum Marianum (*fl pi-p*); Statice Suworowi (*fl l*); Streptanthus maculatus (*fl p*); Tagetes erecta (*fl y*); T. patula (*fl y* or *y-br*); T. tenuifolia (*fl y*); Tropæolum majus (*fl* variable); T. minus (*fl* variable); T. peregrinum (*fl y*); Ursinia pulchra (*fl o*); Vesicaria grandiflora (*fl y*); Vicia onobrychioides (*fl p*); Wahlenbergia hederacea (*fl b*); Xeranthemum annuum (*fl p*); Zea Mays (*fl, fol*) and vars.

BIENNIALS.—Althæa caribæa (*fl pi*); Aster Bigelovii (*fl l* and *y*); Bromus brizæformis (*fl*); Campanula Medium (*fl b, p*, and *w*); C. sibirica divergens (*fl v*); Centaurea Fenzlii (*fl y*); Chlora grandiflora (*fl y*); Dianthus chi-

Borders (Hardy Biennials)—*continued.*

nensis (*fl* variable); D. c. Atkinsoni (*fl r*); Digitalis purpurea (*fl p*, varying to *w*); Echinospermum marginatum macranthum (*fl b*); Fœniculum dulce (*fol g*); Glaucium flavum (*fl y*); Grindelia grandiflora (*fl y* or *o*); Hesperis grandiflora (*fl*); Lavatera arborea variegata (*fol* variegated); Meconopsis nepalensis (*fl y*); Michauxia lævigata (*fl w*); Myosotis sylvatica (*fl b, y* throat); Œnothera biennis (*fl y, sc*); Salvia bicolor (*fl b-v*, dotted *y*, and *w*); Tragopogon glaber (*fl p*); Verbascum Chaixii (*fl y*).

PERENNIALS.—Abronia fragrans (*fl w, sc*); Acantholimon glumaceum (*fl pi*); A. venustum (*fl pi*); Acanthus longifolius (*fl p*); A. mollis (*fl w* or *pi*); A. m. latifolius (*fl w* or *pi*); A. spinosissimus (*fl pi*); A. spinosus (*fl p*); Achillea ægyptiaca (*fl y*); A. asplenifolia (*fl pi*); A. aurea (*fl y*); A. Eupatorium (*fl y*); A. Millefolium roseum (*fl pi*); A. Ptarmica flore-pleno (*fl w*); Aconitum album (*fl w*); A. angustifolium (*fl b*); A. Anthora (*fl y*); A. A. nemorosum (*fl y*); A. barbatum (*fl c*); A. biflorum (*fl b*); A. chinense (*fl b*); A. delphinifolium (*fl b-p*); A. eminens (*fl b*); A. gracile (*fl b* or *v*); A. Halleri (*fl v*); A. H. bicolor (*fl w*, variegated *b*); A. japonicum (*fl pi*); A. lycoctonum (*fl v*); A. Napellus (*fl*); A. ochroleucum (*fl c*); A. Ottonianum (*fl b*, variegated *w*); A. paniculatum (*fl v*); A. pyrenaicum (*fl y*); A. rostratum (*fl v*); A. tauricum (*fl b*); A. uncinatum (*fl b*); A. vulparia (*fl y*); A. v. septentrionale (*fl b*); A. Willdenovii (*fl b-p*); Actinella grandiflora (*fl y*); Actinomeris helianthoides (*fl y*); A. procera (*fl y*); A. squarrosa (*fl y*); Adenophora coronopifolia (*fl b*); A. denticulata (*fl b*); A. Fischeri (*fl b* or *b-w*); A. Lamarckii (*fl b*); A. liliiflora (*fl sc*); A. pereskiæfolia (*fl b*); A. stylosa (*fl b*); A. verticillata (*fl b*); Adonis pyrenaica (*fl y*); Æthionema coridifolium (*fl pi-l*); Agrimonia odorata (*fl y*); Agrostemma coronaria (*fl w*, *r* centre, &c.); A. flos-Jovis (*fl p* or *r*); Aira flexuosa (*fl br*); Ajuga orientalis (*fl b*); A. pyramidalis (*fl b* or *p*); A. reptans (*fl b* to *pi*); Alchemilla alpina (*fl g*); A. sericea (*fl g*); Aletris aurea (*fl y*); A. farinosa (*fl w*); Allium acuminatum (*fl pi*); A. azureum (*fl b*); A. Bidwelliæ (*fl pi*); A. Breweri (*fl pi*); A. cœruleum (*fl b*); A. falcifolium (*fl pi*); A. Macnabianum (*fl m*); A. Moly (*fl y*); A. Murrayanum (*fl pi-p*); A. neapolitanum (*fl w*); A. nigrum (*fl v* or *w*); A. pedemontanum (*fl pi-p*); A. reticulatum attenuifolium (*fl w*); A. roseum (*fl l-pi*); A. sphærocephalum (*fl r-p* and *g*); Alströmeria aurantiaca (*fl r-y*); A. chilensis (*fl pi* or *r*, variegated *y*); A. psittacina (*fl r* and *g*, spotted *p*); A. versicolor (*fl y*, marked *p*); A. v. niveo-marginata (*fl pi, r*, and *w*, marked *g* and *bk*); Althæa cannabina (*fl pi*); A. flexuosa (*fl r*); A. narbonensis (*fl r*); A. rosea (*fl pi, w, y, r*, &c.); Alyssum alpestre (*fl y*); A. orientale (*fl* and *fol y*); Amsonia salicifolia (*fl b*); A. Tabernæmontana (*fl b*); Anemone alpina (*fl w* and *p, c, y*, &c.); A. a. sulphurea (*fl y*); A. angulosa (*fl b*); A. apennina (*fl b*); A. blanda (*fl b*); A. coronaria (*fl* various); A. decapetala (*fl c* or *y*); A. dichotoma (*fl w*, tinged *r*); A. fulgens (*fl r, bk* centre); A. Halleri (*fl p*); A. japonica (*fl r*); A. j. alba (*fl w*); A. j. elegans (*fl pi*); A. multifida (*fl r, w-y*, or *y*); A. nemorosa cærulea (*fl b*); A. n. flore-pleno (*fl w*); A. n. Robinsoniana (*fl b*); A. n. rosea (*fl pi*); A. patens (*fl p* or *y*); A. p. Nuttalliana (*fl p* or *c*); A. pratensis (*fl p*); A. Pulsatilla (*fl v*); A. rivularis (*fl w, p* anthers); A. stellata (*fl p, pi*, or *w*); A. sylvestris (*fl w*); A. vernalis (*fl w* and *v*); A. virginiana (*fl p* or *p-g*); Anemonopsis macrophylla (*fl l* and *p*); Antennaria dioica (*fl pi*); A. d. minima (*fl pi*); A. margaritacea (*fl w*); A. tomentosa (*fol*); Anthemis Aizoon (*fl w*); A. Biebersteinii (*fl y*); Anthericum Liliago (*fl w*); A. Liliastrum (*fl w*, spotted *g, sc*); A. L. major (*fl w*, spotted *g, sc*); A. ramosum (*fl w*); Antirrhinum majus (*fl* variable); Apios tuberosa (*fl br-p, sc*); Apocynum androsæmifolium (*fl r*); Aquilegia atropurpurea (*fl p* or *b-p*); A. cærulea (*fl b* and *w*, &c.); A. c. alba (*fl w*); A. c. hybrida (*fl b* and *w*); A. canadensis (*fl r* and *y*); A. chrysantha (*fl y*, tipped *r*); A. formosa (*fl r* and *y*); A. fragrans (*fl w* or *p, sc*); A. glandulosa (*fl l-b* and *w*); A. olympica (*fl b* and *w*); A. vulgaris (*fl w, b, l-p*, &c.); Arabis lucida (*fl w*); A. l. variegata

Borders (Hardy Perennials)—*continued.*

(*fol y* and *g*); A. rosea (*fl pi*); Aralia edulis (*fol g*); A. nudicaulis (*fol g*); A. racemosa (*fol g*); Arisæma ringens (*fl g* and *w*); A. triphylla (*fl g* and *p-br*); Armeria cephalotes (*fl pi* or *r*); A. plantaginea (*fl pi*); Arnebia echioides (*fl y*); Arnica Chamissonis (*fl y*); A. foliosa (*fl y*); A. scorpioides (*fl y*); Artemisia cana (*fol w*); A. vulgaris (*fol w* and variegated); Arum italicum (*fl g-y* or *w*); A. i. marmoratum (*fol y* and *g*); A. proboscideum (*fl g-p*); A. tenuifolium (*fl w*); Asclepias acuminata (*fl r* and *w*); A. amœna (*fl p*); A. Douglasii (*fl l-p*); A. incarnata (*fl r* or *p*); A. quadrifolia (*fl w, sc*); A. syriaca (*fl p, sc*); A. tuberosa (*fl o*); A. variegata (*fl w*; *fr r*); Ascyrum Crux-Andreæ (*fl y*); Asperula longiflora (*fl w, y*, and *r*); A. montana (*fl pi*); A. odorata (*fl w*); Aster acuminatus (*fl w*); A. æstivus (*fl b*); A. alpinus (*fl p*); A. altaicus (*fl b-p*); A. Amellus (*fl p*); A. A. bessarabicus (*fl p*); A. argenteus (*fl p*); A. caucasicus (*fl p*); A. concinnus (*fl p*); A. Douglasii (*fl p*); A. dumosus (*fl w*); A. d. albus (*fl w*); A. ericoides (*fl w*); A. floribundus (*fl p*); A. grandiflorus (*fl p*); A. hyssopifolius (*fl w*, or shaded *p*); A. lævis (*fl b*); A. longifolius (*fl w*); A. l. formosus (*fl pi*); A. multiflorus (*fl w*); A. novæ-angliæ (*fl p*); A. n.-a. rubra (*fl r-pi*); A. novæ-belgii (*fl b*); A. n.-b. amethystinus (*fl b*); A. paniculatus (*fl b*); A. pendulus (*fl w*, ultimately turning *pi*); A. peregrinus (*fl b-p*); A. pulchellus (*fl p*); A. pyrenæus (*fl l-b* and *y*); A. salsuginosus (*fl v-p*); A. sikkimensis (*fl p*); A. spectabilis (*fl b*); A. Tradescanti (*fl w*); A. versicolor (*fl w*, turning *p*); Astragalus adsurgens (*fl b-p*); A. alopecuroides (*fl y*); A. austriacus (*fl b* and *p*); A. galegiformis (*fl y*); A. glycyphyllos (*fl y*); A. hypoglottis (*fl p, b*, and *w*); A. h. alba (*fl w*); A. leucophyllus (*fl y*); A. maximus (*fl y*); A. onobrychioides (*fl p*); A. sulcatus (*fl v, w* keel tipped *br*); A. vulpinus (*fl y*); Astrantia carniolica (*fl w*; *fol g*, tinged *r*); A. helleborifolia (*fl pi*); A. major (*fl pi*); Baptisia alba (*fl w*); B. australis (*fl b*); B. exaltata (*fl b*); B. perfoliata (*fl y*); B. tinctoria (*fl y*); Bellevalia romana (*fl w*); B. syriaca (*fl w*); Bellidiastrum Michelii (*fl w*); Bellis perennis vars. (*fl w* or *r*); B. p. aucubæfolia (*fol g*, variegated *y*); Berkheya purpurea (*fl p*); Biarum tenuifolium (*fl br-p*); Boltonia asteroides (*fl pi*); B. glastifolia (*fl pi*); Brodiæa capitata (*fl v-b*); B. coccinea (*fl r*, tipped *y-g*); B. congesta (*fl b*); B. c. alba (*fl w*); B. grandiflora (*fl b-p*); B. Howellii (*fl b-p*); B. lactea (*fl w*, midribs *g*); B. multiflora (*fl b-p*); Bulbocodium vernum (*fl v-p, w* spot); Buphthalmum grandiflorum (*fl y*); B. salicifolium (*fl y*); B. speciosissimum (*fl y*); Cacalia suaveolens (*fl w*); C. tuberosa (*fl w*); Calamintha grandiflora (*fl p*); Callirhoe digitata (*fl r-p*); C. involucrata (*fl r*); C. Papaver (*fl v-r*); Calophanes oblongifolia (*fl b*); Caltha leptosepala (*fl w*); C. palustris (*fl y*) and vars.; C. radicans (*fl y*); Calystegia dahurica (*fl r-p*); C. pubescens flore-pleno (*fl pi*); C. Soldanella (*fl r, y* plaits); Camassia esculenta (*fl b* or *w*); C. e. Leichtlini (*fl c-w*); C. Fraseri (*fl b*); Campanula betonicæfolia (*fl p-b, y* base); C. bononiensis (*fl b-v* or *w*); C. carpathica (*fl b*); C. c. alba (*fl w*); C. c. pelviformis (*fl l, sc*); C. c. turbinata (*fl p*); C. collina (*fl b*); C. glomerata (*fl b-v* or *w*); C. grandis (*fl r-b* or *w*); C. isophylla (*fl l-b, gy* centre); C. lactiflora (*fl c* tinged *b*, or *b*); C. latifolia macrantha (*fl p-b*); C. nitida (*fl b* or *w*); C. nobilis (*fl r-v, w*, or *c*); C. peregrina (*fl v*); C. persicæfolia (*fl b*, varying to *w*); C. pyramidalis (*fl b* or *w*); C. rapunculoides (*fl b-v*); C. Rapunculus (*fl b* or *w*); C. rotundifolia (*fl b*); C. r. alba (*fl w*); C. r. Hostii (*fl b*); C. r. soldanellæflora (*fl b*); C. sarmatica (*fl b*); C. speciosa (*fl b, p*, or *w*); C. Trachelium (*fl b*, varying to *w*); C. Van Houttei (*fl b*); Cardamine asarifolia (*fl w*); C. pratensis (*fl p* or *w*); C. rhomboidea (*fl w*); C. r. purpurea (*fl pi-p*); C. trifolia (*fl w*); Carex riparia (*fl*); Carlina acanthifolia (*fl w*); Cedronella cordata (*fl p*); Centaurea alpina (*fl y*); C. atropurpurea (*fl p*); C. aurea (*fl y*); C. babylonica (*fl y*); C. dealbata (*fl pi*); C. macrocephala (*fl y*); C. montana (*fl b*); C. m. alba (*fl w*); C. m. rosea (*fl pi*); Centranthus ruber (*fl r* or *w*); Cerastium alpinum (*fl w*); C. Bieber-

Borders (Hardy Perennials)—*continued.*

steinii (*fol si*); C. Boissieri (*fl w*); C. tomentosum (*fol si*); Cerinthe maculata (*fl y*, spotted *p*); Chaptalia tomentosa (*fl w*); Cheiranthus Cheiri (*fl* variable, *sc*); C. Marshallii (*fl o*); Chelone Lyoni (*fl p*); C. nemorosa (*fl pi-p*); C. obliqua (*fl p*); C. o. alba (*fl w*); Chionodoxa Luciliæ (*fl b*, *w* centre, or *w*); C. nana (*fl w*, *l*); Chlorogalum pomeridianum (*fl w*, veined *p*); Chrysanthemum argenteum (*fl w*); C. sinense (*fl* variable); Chrysobactron Hookeri (*fl y*); Chrysogonum virginianum (*fl y*); Chrysopsis trichophylla (*fl y*); Cimicifuga americana (*fl w*); C. japonica (*fl w*); C. racemosa (*fl w*); Clematis aromatica (*fl v-b*, *sc*); C. recta (*fl w*, *sc*); Clintonia Andrewsiana (*fl pi*); C. uniflora (*fl w*); Cnicus acaulis (*fl p*); C. altissimus (*fl p*); C. spinosissimus (*fl y*); C. undulatus (*fl p*); Colchicum autumnale (*fl p*); C. Bivonæ (*fl w* and *p*); C. byzantinum (*fl pi*); C. luteum (*fl y*); C. Parkinsoni (*fl w*, tessellated *p*); Commelina virginica (*fl b*); Convallaria majalis (*fl w*, *sc*); Convolvulus althæoides (*fl r* or *l*); C. chinensis (*fl r-p*, marked *y*); Coreopsis auriculata (*fl y*, banded *p-br*); C. grandiflora (*fl y*); C. lanceolata (*fl y*); C. verticillata (*fl y*); Coronilla varia (*fl pi*); Corydalis bracteata (*fl y*); C. cava (*fl p*); C. c. albiflora (*fl w*); C. Kolpakowskiana (*fl pi* or *p*); C. lutea (*fl y*); C. Marschalliana (*fl y*); C. nobilis (*fl y*, tipped *g*); C. solida (*fl p*); Crambe cordifolia (*fl w*; *fol g*); Crinum capense (*fl* flushed *r*); Crocosmia aurea (*fl o-r*); Crocus aureus (*fl o*); C. biflorus (*fl w*, varying to *l*); C. Boryi (*fl c-w* and *o-y*); C. Imperati (*fl l-p*, lined *p*); C. iridiflorus (*fl p* and *l*); C. nudiflorus (*fl p* or *v*); C. speciosus (*fl l*, striped *p*); C. susianus (*fl o*, or marked *br*); C. vernus (*fl l*, *v*, *w*, or streaked *v* and *w*); C. versicolor (*fl p*, varying to *w*); Dictamnus cannabina (*fl y*; *fol g*); Delphinium azureum (*fl b*); D. cashmirianum (*fl b*); D. exaltatum (*fl b* or *w*); D. formosum (*fl b*); D. grandiflorum (*fl b*, varying to *w*); D. nudicaule (*fl r* and *y*); Dentaria digitata (*fl p*); D. diphylla (*fl w* and *p*); D. polyphylla (*fl c*); Dianthus arenarius (*fl w*, livid spot); D. atrorubens (*fl r*); D. barbatus (*fl* variable); D. Caryophyllus (*fl* all colours except *b*); D. cruentis (*fl r*); D. fimbriatus (*fl pi*); D. Fischeri (*fl pi*); D. fragrans (*fl w*, suffused *p*, *sc*); D. Holtzeri (*fl pi*); D. plumarius (*fl p*, *w*, &c.); D. Seguierii (*fl pi p*); D. superbus (*fl pi*, *sc*); Dicentra chrysantha (*fl y*); D. eximia (*fl r-p*); D. formosa (*fl r*); D. spectabilis (*fl pi-r*); D. thalictrifolia (*fl y*, *r* mouth, *sc*); Dictamnus albus (*fl w* or *p*); Digitalis ambigua (*fl y*, reticulated *br*); Dodecatheon integrifolium (*fl r*); D. Meadia (*fl pi-p*, *w*, or *l*, *y* anthers); D. M. frigidum (*fl r-p*); D. M. lancifolium (*fl pi*, *y* at base); Doronicum altaicum (*fl y*); D. austriacum (*fl y*); D. caucasicum (*fl y*); D. Pardalianches (*fl y*); D. plantagineum excelsum (*fl y*); Dracocephalum altaiense (*fl b*); D. austriacum (*fl b*); D. peregrinum (*fl b*); D. Ruprechtii (*fl pi-p* or *l*); D. Ruyschianum japonicum (*fl w*, bordered *b*); D. speciosum (*fl pi-b*, spotted); Dracunculus vulgaris (*fl br*); Echinacea angustifolia (*fl pi* or *p*); E. purpurea (*fl r-p*, tipped *g*); Echinops commutatus (*fl w*); E. Ritrio (*fl b*); Epilobium Dodonæi (*fl pi*); E. hirsutum (*fl pi* or *w*); E. rosmarinifolium (*fl r*); Eremurus himalaicus (*fl w*); E. robustus (*fl* peach); E. spectabilis (*fl y-y*); Erigeron aurantiacus (*fl y*); E. glaucus (*fl p*); E. grandiflorus (*fl p* or *w*); E. speciosus (*fl v* and *y*); Eryngium alpinum (*fl b*); E. amethystinum (*fl b*); E. Bourgati (*fl b*); E. giganteum (*fl b*); Erysimum alpinum (*fl y*, *sc*); E. ochroleucum (*fl y-w*, *sc*); Erythronium americanum (*fl y*); E. dens-canis (*fl p-pi* or *w*); Eulalia japonica foliis-striatis (*fol g*, banded *c*); E. j. zebrina (*fol g*, cross-barred *y*); Ferula asparagifolia (*fl y*; *fol g*); F. communis (*fl y*; *fol g*); F. glauca (*fl y*; *fol g*); F. tingitana (*fl y*; *fol g*); Fœniculum vulgare (*fol g*); Fragaria chilensis (*fl w*; *fr pi*); F. c. grandiflora (*fl w*; *fr r*); Fritillaria armena (*fl y*); F. delphinensis (*fl p*, spotted *y*); F. græca (*fl br*, spotted, &c.); F. Hookeri (*fl l*); F. imperialis (*fl y*, varying to *r*); F. lutea (*fl y*, suffused *p*); F. macrophylla (*fl pi*); F. Meleagris (*fl* chequered *p*); F. pallidiflora (*fl y*); F. persica (*fl v-b*); F. pudica (*fl y*); F. pyrenaica (*fl p*); F. recurva (*fl r*); F. Sewerzowi (*fl p*, *g-y* within); F. tenella (*fl y*, chequered *p-br*); F. tulipifolia (*fl b*, streaked *p-br*, *p-br* within); F. verticillata Thunbergii (*fl g*, mottled *p*); Funkia ovata (*fl b-l* or *w*); F. o. marginata (*fl b-l* or *w*; *fol g*, margined *w*); F. Sieboldiana (*fl w*, tinged *l*); F. subcordata (*fl w*); Gagea lutea (*fl y*, *g* at back); Galanthus Elwesii (*fl w*, spotted *g*); G. nivalis (*fl w*, marked *g*) and vars.; G. plicatus (*fl g-w*); Galega officinalis (*fl b*); G. o. albiflora (*fl w*); G. orientalis (*fl b*); Galtonia candicans (*fl w*, *sc*); Gentiana acaulis (*fl b*, marked *y*); G. affinis (*fl b*); G. Andrewsii (*fl b*); G. asclepiadea (*fl*); G. cruciata (*fl b*, dotted *g*); G. lutea (*fl y*, veined and spotted); G. Pneumonanthe (*fl b*, *w*, &c.); G. septemfida (*fl b*); Geranium atlanticum (*fl p*, veined *r*); G. dahuricum (*fl p*); G. Endressii (*fl pi*, dark veins); G. ibericum (*fl b*); G. Lamberti (*fl l*); G. macrorhizon (*fl r* or *p*); G. maculatum (*fl b*); G. phæum (*fl bl-br*, spotted *w*); G. pratense (*fl b*); G. striatum (*fl pi*, dark stripes); G. sylvaticum (*fl p* or *b*); Geum coccineum (*fl p*); G. elatum (*fl y*); G. montanum (*fl y*); G. pyrenaicum (*fl y*); G. rivale (*fl y*); G. triflorum (*fl p*, *w*, and *p-r*); Gilia Brandegei (*fl y*); Gillenia trifoliata (*fl r*, varying to *w*); Gladiolus byzantinus (*fl r*); G. segetum (*fl pi*); Globularia vulgaris (*fl b*); Glycyrrhiza glabra (*fl b*); Gratiola aurea (*fl y*); G. officinalis (*fl w*, striated *p*); Gynerium argenteum (*fl* silky, sometimes tinted *p* or *y*); Gypsophila cerastioides (*fl w*, veined *r*); G. paniculata (*fl w*); G. Stevenii (*fl w*); Hedysarum coronarium (*fl r*); Helenium autumnale (*fl y*); Helianthus decapetalus multiflorus (*fl y*); H. orgyalis (*fl y*); H. rigidus (*fl br* and *y*); Helichrysum arenarium (*fl y*); Helleborus niger (*fl w*); H. olympicus (*fl p*); Hemerocallis Dumortieri (*fl o-y*, tinged *br*); H. flava (*fl o-y*, *sc*); H. fulva (*fl y*); H. Middendorfi (*fl y*); H. minor (*fl y*); Hesperis matronalis (*fl* variable, usually *sc*); Heuchera americana (*fl r*; *fol g*); H. hispida (*fl* veined *p*; *fol g*); H. sanguinea (*fl r*; *fol g*); Holcus lanatus albo-variegatus (*fol w*, striped *g*); Hypericum elegans (*fl y*); H. patulum (*fl y*); H. perfoliatum (*fl y*); Iberis Tenoreana (*fl p* or *w*); Incarvillea Olgæ (*fl pi*); Iris (Xiphion) alata (*fl l-p*); I. aurea (*fl y*); I. balkana (*fl l-p*); I. biflora (*fl v-p*); I. Chamæiris (*fl y*, veined *br*); I. cretensis (*fl l*); I. cristata (*fl l*); I. dichotoma (*fl l*, *w*, and *p*); I. Douglasiana (*fl l-p*); I. (Xiphion) filifolia (*fl p*, keel *y*); I. flavescens (*fl y*); I. florentina (*fl w*, *l*, *g*, and *br*); I. fœtidissima (*fl b-l*); I. fulva (*fl br*); I. germanica (*fl* variable, *sc*); I. graminea (*fl l-p*, *w*, *y*, and *b-p*, *sc*); I. Guldenstadtiana (*fl w*, *o*, and *y*); I. (Xiphion) Histrio (*fl l*, *l-p* and *y*); I. hybrida (*fl* variable); I. iberica (*fl p-b*, blotched *p*); I. i. insignis (*fl w* and *l-w*, blotched and veined *r-br*); I. lævigata (*fl p*, blotched *y*, &c.); I. lutescens, *fl y*, marked *p-br*); I. Monnieri (*fl y*, *sc*); I. neglecta (*fl l*, *w*, and *y*); I. ochroleuca (*fl w* and *o-y*); I. (Xiphion) persica (*fl y-l*, keeled *y*, *sc*); I. pumila (*fl l-p*); I. (Xiphion) reticulata (*fl r-p*, lined *p*); I. rubromarginata (*fl g*, tinged *p*); I. sambucina (*fl p* and *y*, *sc*); I. sibirica (*fl l-b* and *v*); I. squalens (*fl l-p*, *y*, and *br-y*); I. tectorum (*fl l* and *w*); I. (Xiphion) tingitana (*fl l-p*); I. tuberosa (*fl g-y*); I. unguicularis (*fl l*, *y*, and *w*, *sc*); I. variegata (*fl br* and *y*); I. versicolor (*fl p*); I. (Xiphion) vulgare (*fl p*); I. (Xiphion) xiphioides (*fl l-p*, *y*, and *p*); Isopyrum thalictroides (*fl w*; *fol g*); Kniphofia aloides (*fl* coral-*r*, fading to *g-y*) and vars.; K. Burchelli (*fl r* and *y*, tipped *g*); K. Leichtlinii (*fl r* and *y*); K. Rooperi (*fl o-r*, turning *y*); Lactuca alpina (*fl p-b*); L. macrorhiza (*fl r-p*); L. tuberosa (*fl b*); Lamium maculatum (*fl p*; *fol g*, striped *w*; Lathyrus magellanicus (*fl b-p*); L. pratensis (*fl y*); L. rotundifolius (*fl pi*); L. sylvestris platyphyllus (*fl pi* or *w*); Leucoium æstivum (*fl w*, tipped *g*); L. Hernandezii (*fl w*, spotted *g*); L. vernum (*fl w*, spotted *g*, *sc*); Libertia formosa (*fl w*); Ligularia Kæmpferi aureo-maculata (*fol g*, blotched *y*, *w*, or *pi*); Lilium auratum (*fl w*, banded *y*, spotted *p*) and vars.; L. bulbiferum (*fl r*); L. canadense (*fl y* to *r*, spotted *r-p*); L. candidum (*fl w*, rarely tinged *p*); L. Catesbæi (*fl o-r*, spotted *p*); L. chalcedonicum (*fl r*, rarely *y*); L. concolor Buschianum (*fl r*,

Borders (Hardy Perennials)—*continued.*

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spotted *bk* below); L. croceum (*fl y*, tinted *r*); L. davuricum (*fl r*) and vars.; L. elegans (*fl r*, rarely spotted); L. e. armeniacum (*fl r*, spotted *y*); L. e. atrosanguineum (*fl* blotched *r*); L. e. sanguineum (*fl r* and *y*); L. Hansoni (*fl r-o*, dotted *p*); L. Kræmeri (*fl w*, tinged *r*, *sc*); L. Leichtlinii (*fl y*, marked *p* and *r*); L. longiflorum (*fl w*, *sc*); L. l. eximium (*fl w*); L. Martagon (*fl p-r*, spotted *p*); L. monadelphum (*fl y*, tinged *r* at base) and vars.; L. oxypetalum (*fl l-p*, dotted *p* within); L. pardalinum (*fl o-r*, variable); L. Parryi (*fl y*, spotted *br-r*, *sc*); L. philadelphicum (*fl o-r*, spotted *p* below); L. pomponium (*fl r*); L. pseudo-tigrinum (*fl r*, spotted *bk* within); L. pyrenaicum (*fl y*); L. roseum (*fl l*); L. speciosum (*fl w*, or spotted *r*); L. s. albiflorum (*fl w*); L. s. punctatum (*fl w*, spotted *r*); L. s. roseum (*fl w*, tinted *pi*); L. superbum (*fl o-r*, spotted); L. tenuifolium (*fl r*); L. tigrinum (*fl o-r*, spotted *p-bk*) and vars.; L. Washingtonianum (*fl w*, tinged *p* or *l*); Linaria dalmatica (*fl y*); L. purpurea (*fl b-p*); L. triornithophora (*fl p* and *y*); Linum narbonense (*fl b* or *w*); Lithospermum Gastoni (*fl b*); L. purpureo-cæruleum (*fl r*, at length *pi*); L. prostratum (*fl b*, striped *r-v*); Lobelia syphilitica (*fl b*); Lophanthus anisatus (*fl b*); Lupinus lepidus (*fl p-b*, spotted *w*); L. leucophyllus (*fl pi*); L. nootkatensis (*fl b*, mixed *p*, *w*, or *y*); L. ornatus (*fl b*); L. perennis (*fl b*); L. polyphyllus (*fl b*); L. subcarnosus (*fl b*, blotched *y*); Lychnis chalcedonica (*fl r* or *w*); L. coronaria (*fl r*); L. diurna (*fl p-pi*); L. fulgens (*fl r*); L. f. Haageana (*fl r*, varying to *w*); L. vespertina (*fl w*, *sc*); L. Viscaria (*fl pi* or *r*); Lythrum Salicaria (*fl r-p*); Malva Alcea fastigiata (*fl r*); M. moschata (*fl pi* or *w*); Marshallia cæspitosa (*fl b-w*); Melittis Melissophyllum (*fl c-w*, spotted *pi* or *p*); Mertensia alpina (*fl b*); M. lanceolata (*fl b*); M. sibirica (*fl p-b* or *w*); M. virginica (*fl p-b*); Meum athamanticum (*fl w*); Milla biflora (*fl w* and *g*); Mimulus moschatus (*fl y*; *fol sc*); Mirabilis Jalapa (*fl w*, *y*, *r*, &c.); Monarda didyma (*fl r*); M. fistulosa (*fl p*); Morina Coulteriana (*fl y*); M. longifolia (*fl w*, changing to *r*); Muscari botryoides (*fl b*, *w* teeth) and vars.; M. comosum monstrosum (*fl b-v*); M. Elwesii (*fl b*); M. Heldreichii (*fl b*); M. moschatum (*fl p*, changing to *g-y* tinged *v*, *sc*); M. neglectum (*fl b*, *sc*); M. paradoxum (*fl b-bk*, *g* inside, *sc*); M. racemosum (*fl b*, changing to *r-p*, sometimes tipped *w*, *sc*); M. Szovitsianum (*fl b*, *sc*); Myosotis dissitiflora (*fl b*); M. palustris (*fl b*, *y* throat); Narcissus biflorus (*fl w*, crown *y*); N. Bulbocodium (*fl y*) and vars.; N. calathinus (*fl y*); N. incomparabilis (*fl y*) and vars.; N. Jonquilla (*fl y*, *sc*); N. Macleai (*fl w* and *y*); N. poeticus (*fl w*, crown edged *r*, *sc*) and vars.; N. Pseudo-Narcissus (*fl y*) and vars.; N. Tazetta (*fl w* and *y*, &c., *sc*) and vars.; N. triandrus (*fl w* or *y*, &c.) and vars.; Nierembergia rivularis (*fl w*, tinged *pi* or *y*); Nothoscordum fragrans (*fl w*, barred *l*, *sc*); Œnothera acaulis (*fl w*, fading to *r*); Œ. californica (*fl w*, varying to *pi*, *y* centre, *sc*); Œ. eximia (*fl w*); Œ. glauca (*fl y*); Œ. g. Fraseri (*fl y*); Œ. linearis (*fl y*, *sc*); Œ. missouriensis latifolia (*fl y*); Œ. pallida (*fl w*, *y* at base); Œ. speciosa (*fl w*, fading to *r*); Œ. taraxacifolia (*fl w*, fading to *r*); Ononis Natrix (*fl y*, veined *r*); Onopordon Acanthium (*fl p*); Ornithogalum narbonense (*fl w*, striped *g*); O. nutans (*fl w* and *g*); O. pyramidale (*fl w* and *g*); O. umbellatum (*fl w* and *g*); Orobus aurantius (*fl y*); O. flaccidus (*fl p*); O. pannonicus (*fl w*, *p*, &c.); O. vernus (*fl p* and *b*, veined *r*); Ourisia coccinea (*fl r*, *c* anthers); O. Pearcei (*fl r*); Oxalis tetraphylla (*fl r* or *p-v*); Pæonia albiflora (*fl w*, *pi*, &c.) and vars.; P. Emodi (*fl w*); P. officinalis (*fl r*); P. tenuifolia (*fl r*); P. Wittmanniana (*fl y-w*); P. varieties; Pancratium illyricum (*fl w*, *sc*); Panicum virgatum (*fl*); Papaver bracteatum (*fl r*); P. nudicaule (*fl y* or *w*); P. orientale (*fl r*, spotted *p*); P. pilosum (*fl r* or *o*, marked *w*); Pedicularis dolichorhiza (*fl y*); P. flammea (*fl r*); P. Sceptrum-Carolinum (*fl y*); P. verticillata (*fl pi* or *w*); Peltaria alliacea (*fl w*); Pentstemon antirrhinoides (*fl y*); P. azureus (*fl b*, *r-p* at base); P. barbatus (*fl r*) and var.;

Borders (Hardy Perennials)—*continued.*

P. breviflorus (*fl y* or *pi*); P. campanulatus (*fl pi*, *v*, &c.); P. confertus (*fl g-y*); P. deustus (*fl y*); P. diffusus (*fl p*); P. Eatoni (*fl r*); P. glaber (*fl p*, *v*, or *b*); P. gracilis (*fl l-p* or *w*); P. Hartwegi (*fl r*); P. heterophyllus (*fl pi* or *pi-p*); P. Menziesii Douglasii (*fl l-p*, *pi-r* at base); P. Murrayanus (*fl r*); P. pubescens (*fl v* or *p*, or partly *w*); P. venustus (*fl p*); Petasites fragrans (*fl w*, *sc*); P. frigida (*fl w*); Phalaris arundinacea (*fl p*); Phlomis herba venti (*fl b-v*); Phlox amœna (*fl p*, *pi*, or *w*); P. divaricata (*fl l* or *b*); P. glaberrima (*fl r*); P. g. suffruticosa (*fl pi*); P. maculata (*fl p*, &c., *sc*); P. ovata (*fl r-p*); P. paniculata (*fl pi-p*, varying to *w*); P. pilosa (*fl pi*, *p*, *w*, &c.); P. reptans (*fl p* or *v*); P. subulata (*fl p* or *w*); Phuopsis stylosa (*fl pi*); Physalis Alkekengi (*fl w* and *r*; *fr r*); Physostegia virginiana (*fl pi* or *p*) and vars.; Phyteuma comosum (*fl p* or *b*); P. humile (*fl b*); Phytolacca decandra (*fl w*; *fr p*); Platycodon grandiflorum (*fl b*); Plumbago Larpentæ (*fl v*); Polemonium cæruleum (*fl b*; *fol* sometimes variegated); P. confertum (*fl b*); P. humile (*fl b* or *p*); P. reptans (*fl b* or *w*); Polygonatum biflorum (*fl g*); P. multiflorum (*fl w*; *fr b-bk*), and vars.; Polygonum affine (*fl pi-r*); P. amplexicaule (*fl pi-r* or *w*); P. compactum (*fl w*); P. cuspidatum (*fl c-w*); P. filiforme variegatum (*fol g* and *y*); P. sachalinense (*fl g-y*); Potentilla argyrophylla (*fl y*); P. congesta (*fl w*); P. Hopwoodiana (*fl* variegated *pi* and *y*); P. nitida (*fl pi*); P. unguiculata (*fl w*); Prenanthes purpurea (*fl p*); Primula Allionii (*fl mv*, *w* eye); P. altaica (*fl mv* or *p-r*, *y* eye); P. Auricula (*fl* variable); P. auriculata (*fl p*, *w* eye); P. calycina (*fl p*); P. capitata (*fl v-b*); P. cortusoides (*fl pi*); P. denticulata (*fl l*); P. d. cashmeriana (*fl p*, *y* eye); P. farinosa (*fl p*, *y* eye); P. floribunda (*fl y*); P. glutinosa (*fl b-p*); P. japonica (*fl* variable); P. marginata (*fl pi-v*); P. minima (*fl pi* or *w*); P. mollis (*fl r*, *pi*); P. nivalis (*fl w*); P. Parryi (*fl p*, *y* eye); P. rosea (*fl pi-r*, *y* eye); P. scotica (*fl p*, *y* eye); P. sikkimensis (*fl y*); P. spectabilis Wulfeniana (*fl pi-p*); P. Steinii (*fl p*); P. Stuartii (*fl p*); P. viscosa (*fl pi-p*, *w* eye); P. v. pedemontana (*fl pi-p*, *y-w* eye); P. vulgaris (*fl y*); Pulmonaria angustifolia (*fl pi*, at length *b*); P. saccharata (*fl pi*); Puschkinia scilloides (*fl w*, striped *b*); Pyrethrum achilleæfolium (*fl y*); P. corymbosum (*fl w*); P. parthenifolium aureum (*fol g-y*); P. roseum (*fl pi* and *y*) and vars.; P. Tchihatchewii (*fl w* and *y*); T. uliginosum (*fl w* and *y*); Ranunculus aconitifolius (*fl w*); R. amplexicaulis (*fl w*); R. anemonoides (*fl w*, tinted *p*); R. asiaticus (*fl* variable); R. a. sanguineus (*fl p*, *y*, *o*, or variegated); R. cortusæfolius (*fl y*); R. gramineus (*fl y*); R. parnassifolius (*fl w* or *p*); Rheum nobile (*fol g*, nerved *r*); R. officinale (*fol g*); Rhexia ciliosa (*fl p*); R. virginica (*fl p*); Romulea Bulbocodium (*fl y* and *v*, &c.); Rudbeckia grandiflora (*fl y* and *p*); R. maxima (*fl y*); R. pinnata (*fl y*); R. purpurea (*fl r-p*, tipped *g*); R. speciosa (*fl o* and *bk-p*); Ruscus Hypophyllum (*fr r*); Salvia asperata (*fl w*); S. discolor (*fl p* and *v-bk*); S. hians (*fl b*); S. interrupta (*fl v-p*, *w* throat); S. Rœmeriana (*fl r*); S. Sclarea (*fl b-w*); Sanguinaria canadensis (*fl w*); Saponaria officinalis (*fl l* or *w*); Saussurea pulchella (*fl p*); Saxifraga Camposii (*fl w*); S. Cotyledon (*fl w*; *fol* edged *w*); S. crassifolia (*fl r*); S. diversifolia (*fl y*); S. granulata (*fl w*); S. ligulata (*fl r-w*); S. peltata (*fl w* or *pi*; *fol g*); S. Stracheyi (*fl pi*); S. umbrosa (*fl w*, marked *r*); S. virginiensis (*fl w*); Scabiosa amœna (*fl l* or *pi*); S. caucasica (*fl b*); S. Webbiana (*fl c-y*); Scilla amœna (*fl b* or *w*); S. bifolia (*fl b*, *r*, or *w*); S. hispanica (*fl b*, *w*, &c.) and vars.; S. hyacinthoides (*fl b-l*); S. nutans (*fl b*, *p*, *w*, or *pi*); S. peruviana (*fl l*, *r*, or *w*); S. pratensis (*fl b*); S. sibirica (*fl b*); Scolymus grandiflorus (*fl y*); Scopolia carniolica (*fl r*, *y* or *g* within); Scorzonera undulata (*fl p-pi*); Scutellaria orientalis (*fl y*, or *y* and *p*); Sedum acre aureum (*fol y*); S. Aizoon (*fl y*); S. album (*fl w*; *fol g* and *br*); S. brevifolium (*fl w*, ribbed *pi*; *fol pi*); S. erythrostictum (*fl g*, flushed *pi*); S. glaucum (*fl pi-w*; *fol g* and *w*); S. lydium (*fl pi*; *fol g*, tipped *r*); S. maximum (*fl w*, spotted *r*; *fol g*); S. m. hæmatodes (*fol p*);

Borders (Hardy Perennials)—*continued.*

S. pulchellum (*fl pi-p*); S. reflexum (*fl y*); S. Rhodiola (*fl g* or *r-p*); S. spectabile (*fl pi*); Sempervivum arachnoideum (*fl r*; *fol g* and *br*); S. atlanticum (*fl r*; *fol g* and *r-br*); S. Boissieri (*fl r*; *fol g*); S. calcaratum (*fl r-w*; *fol g*, tipped *r-br*); S. calcareum (*fl r*; *fol g*, tipped *r-br*); S. fimbriatum (*fl r*; *fol g* and *r*); S. Funckii (*fl r-p*; *fol g*); S. Heuffelii (*fl y*; *fol g*, tinted *r-br*); S. Lamottei (*fl pi*; *fol g*, tipped *r-br*); S. montanum (*fl p*; *fol g*); S. Pomelii (*fl pi-r*; *fol g*); S. soboliferum (*fl y*; *fol g*, tipped *r-br*); S. Wulfeni (*fl y*; *fol g*, tipped *r-br*); Senecio Doria (*fl y*); S. Doronicum (*fl y*); S. pulcher (*fl p*, disk *y*); Sida Napæa (*fl w*); Silene Elizabethæ (*fl pi*, *w*, and *p*); S. Hookeri (*fl pi*); S. maritima (*fl w*); S. pennsylvanica (*fl pi*); S. Schafta (*fl p*); S. virginica (*fl r*); Silphium laciniatum (*fl y*); Sisyrinchium grandiflorum (*fl p*, striated, or *w*); Smilacina oleracea (*fl w*, tinged *pi*); S. stellata (*fl w*); Solidago Drummondii (*fl y*); S. lanceolata (*fl y*); S. speciosa (*fl y*); Spigelia marilandica (*fl r* and *y*); Spiræa astilboides (*fl w*); S. Filipendula (*fl w* or *pi*); S. palmata (*fl r*); S. p. alba (*fl w*); S. Ulmaria (*fl w*); Stachys grandiflora (*fl pi* and *w*); S. lunata (*fl* striped); S. Maweana (*fl y-w*, blotched *p*); Statice elata (*fl b*); S. floribunda (*fl b*); S. latifolia (*fl b*); S. tatarica (*fl r*); Sternbergia lutea (*fl y*) and vars.; Stipa pennata (*fl*); Streptopus roseus (*fl p*); Stylophorum diphyllum (*fl y*); Symphytum caucasicum (*fl b*); S. officinale bohemicum (*fl r* or *r-p*); S. tuberosum (*fl y*); Tanacetum leucophyllum (*fl y*; *fol g-w*); Teucrium Chamædrys (*fl pi*, spotted *w* and *r*); Thalictrum anemonoides (*fl w* or *pi*); T. aquilegifolium (*fl w*); T. tuberosum (*fl w*); Thermopsis barbata (*fl p*); T. montana (*fl y*); Thladiantha dubia (*fl*); Tiarella cordifolia (*fl w*); Tradescantia virginica (*fl v*, *p*, or *w*); Trifolium Lupinaster (*fl p*); Trillium erectum (*fl p*); T. erythrocarpum (*fl w*, striped *p*); T. grandiflorum (*fl w*, turning *pi*); T. nivale (*fl w*); Tritonia Pottsii (*fl y*, flushed *r*); Trollius europæus (*fl y*); Tropæolum polyphyllum (*fl y*); T. speciosum (*fl r*); Tulipa australis (*fl* flushed *r*); T. Clusiana (*fl w*, *r*, and *bk*); T. Eichleri (*fl r*, marked *y* and *bk*); T. elegans (*fl r*, *y* eye); T. Gesneriana (*fl r*, *y*, &c.); T. Greigi (*fl r*, blotched *bk*); T. macrospeila (*fl r*, blotched *bk* and *y*); T. Oculus-solis (*fl r*, blotched *bk*); T. præcox (*fl r*, blotched *bk*); T. pubescens (*fl* variable, *sc*); T. retroflexa (*fl y*); T. suaveolens (*fl r* and *y*, *sc*); T. sylvestris (*fl y*, *sc*); T. varieties; Tussilago Farfara variegata (*fol g* and *c-w*); Uvularia grandiflora (*fl y*); U. sessilifolia (*fl y*); Valeriana Phu aurea (*fl w*; *fol g* and *y*); Veratrum album (*fl w* and *g*); V. nigrum (*fl bk-p*); Veronica incana (*fl b*); V. spicata (*fl b*); V. virginica (*fl w* or *b*); Vesicaria utriculata (*fl y*); Vicia argentea (*fl pi*, spotted *bk*); Vinca major (*fl b-p*); V. minor (*fl v-p*, *w*, or *b*); Viola cornuta (*fl b*); V. cucullata (*fl v-b* or *p*) and var.; V. Munbyana (*fl v* or *y*) and var.; V. odorata (*fl b*, *v*, or *r-p*, *sc*) and vars.; V. pedata (*fl b* or *w*) and vars.; V. rothomagensis (*fl b*, striped *bk*); V. suavis (*fl b* and *w*, *sc*); V. tricolor (*fl* variable) and vars.; Waldsteinia fragarioides (*fl y*); Wulfenia carinthiaca (*fl b*); Yucca angustifolia (*fl g*; *fol g* and *r-br*) and var.; Yucca filamentosa vars. (*fol g*, &c.); Y. glauca (*fl w*; *fol g*); Y. gloriosa recurvifolia (*fl w*, tinged *r*; *fol g*); Zephyranthes Atamasco (*fl w*).

Half-Hardy.—ANNUALS.—Alonsoa linifolia (*fl r*); A. Warscewiczii (*fl r*); Amarantus bicolor ruber (*fol*); A. hypochondriacus (*fl* and *fol r*); A. h. atropurpureus (*fl* and *fol p*); A. melancholicus ruber (*fol*); Ammobium alatum grandiflorum (*fl w*); Brachycome iberidifolia (*fl b* or *w*, dark centre); Browallia demissa (*fl b*, *r* or *p*); B. elata (*fl b*); B. grandiflora (*fl g-y*, and *w* or *l*); B. Jamesoni (*fl o*); Castilleja indivisa (*fl g-y*, bracts *r*); Chloris barbata (*fl*); Coix lachryma (*fr*); Datura fastuosa (*fl v*, *w* within); D. Metel (*fl w*, *sc*); Gomphrena globosa (*fl* variable); Helichrysum bracteatum (*fl* variable); H. b. niveum (*fl w*, *y*); Helipterum Humboldtianum (*fl y*); H. Manglesii (*fl pi*, *p*, and *y*); Impatiens Balsamina (*fl r*); Ipomœa hederacea (*fl b*); Lamarckia aurea (*fl*); Lopezia coronata (*fl pi-p*); Martynia fragrans (*fl r-p*, throat *y*,

Borders (Half-hardy Annuals)—*continued.*

sc); Mathiola annua (*fl* variable, *sc*); Maurandya Barclayana (*fl g* and *v-p*); Mentzelia bartonioides (*fl w-y*); M. ornata (*fl w*, *sc*); Nicotiana affinis (*fl y*, *sc*); N. longiflora (*fl w*, turning *p* or *y-g*); Pennisetum longistylum (*fl p*); Perilla ocimoides crispa (*fol p*); Petunia varieties (*fl* variable); Phlox Drummondii (*fl r*, *w*, &c., dark eye); Portulaca grandiflora (*fl y*, *p*); Ricinus communis (*fol g*) and vars.; Salpiglossis sinuata (*fl p*, *y-w*, &c.); Salvia coccinea (*fl r*) and vars.; Schizanthus candidus (*fl w*); S. Grahami (*fl l* or *pi*, and *y*); S. G. retusus (*fl pi* and *o*); Schizopetalon Walkeri (*fl w*); Senecio elegans (*fl p* and *y*); Swertia corymbosa (*fl b*, or *w* nerved *b*); S. paniculata (*fl w*, and *p* or *g*); Zaluzianskia capensis (*fl w*); Zinnia elegans (*fl* variable) and vars.

BIENNIALS.—Ammobium alatum grandiflorum (*fl w*); Anagallis fruticosa (*fl b*); Anarrhinum bellidifolium (*fl w* or *b*); Blumenbachia coronata (*fl w*); Mathiola incana (*fl p*, &c., *sc*).

PERENNIALS.—Ainsliæa Walkeræ (*fl w*, *r* anthers); Alströmeria Pelegrina (*fl w* or *y*, striped *pi*); A. pulchra (*fl p* and *y-w*, spotted *r*); Amaryllis Belladonna (*fl w* to *p*); Ambrosinia Bassii (*fl g*); Amicia Zygomeris (*fl y*, splashed *p*); Anagallis linifolia (*fl b*); A. l. Breweri (*fl r*); A. l. Eugenie (*fl b*, margined *w*); A. l. Napoleon III. (*fl r*); A. l. phœnicia (*fl r*); A. l. Wilmoreana (*fl b-p*, *y* eye); Anomatheca cruenta (*fl r*); Antholyza æthiopica (*fl r* and *g*); A. caffra (*fl r*); A. Cunonia (*fl r* and *bk*); Antirrhinum tortuosum (*fl p*); Aphyllanthes monspeliensis (*fl b*); Arctotis acaulis (*fl y* and *r*); A. arborescens (*fl w*, *pi*, and *y*); A. grandiflora (*fl o*); A. speciosa (*fl y*); Arisæma speciosa (*fl p*, *g*, and *w*); Astilbe japonica (*fl w*); A. j. variegata (*fl w*; *fol g*, variegated *y*); Babiana disticha (*fl b*, *sc*); B. plicata (*fl v-b*, *sc*); B. ringens (*fl r*); B. stricta (*fl w* and *l-b*, dark blotch); B. s. rubro-cyanea (*fl r* and *b*, *sc*); B. s. sulphurea (*fl c* or *y*, *b* anthers); B. s. villosa (*fl r*, *v-b* anthers); Begonia Evansiana (*fl pi*); Bellis rotundifolia cærulescens (*fl w* or *b*); Bessera elegans (*fl r*, or *r* and *w*, variable); Blumenbachia chuquitensis (*fl r* and *y*); Boussingaultia baselloides (*fl w*); Bravoa geminiflora (*fl o-r*); Brodiæa gracilis (*fl y*, nerved *br*); B. volubilis (*fl pi*); Calceolaria amplexicaulis (*fl y*); C. arachnoidea (*fl p*); C. Burbidgei (*fl y*); C. Fothergilli (*fl y*, spotted *r*); C. Pavonii (*fl y* and *b*); C. plantaginea (*fl y*); Calochortus albus (*fl w*, blotched); C. Benthami (*fl y*); C. cæruleus (*fl l*, marked *b*); C. elegans (*fl g-w*. *p* base); C. Gunnisoni (*fl l*, *g*, and *p*); C. lilacinus (*fl pi*); C. luteus (*fl g* and *y*); C. Nuttallii (*fl g* and *y*, marked *r* and *p*); C. pulchellus (*fl y*); C. purpureus (*fl g*, *p*, and *y*); C. splendens (*fl l*); C. venustus (*fl w* and *y*, marked *r*); Caloscordum nerinæflorum (*fl pi*); Caryopteris Mastacanthus (*fl v*); Centaurea Cineraria (*fl p*); C. ragusina (*fl y*); Chionographis japonica (*fl w*); Clianthus Dampieri (*fl r*, blotched *bk* or *p*); Cœlestina ageratoides (*fl b*); Collinsonia anisata (*fl y*); Commelina cœlestis (*fl b*); C. c. alba (*fl w*); Crinum asiaticum (*fl w*); C. Macowani (*fl g*, *w*, and *p*); Cypella Herberti (*fl y*); Dahlia varieties (*fl w*, *y*, *r*, &c.); Dianella lævis (*fl b*); Eryngium pandanifolium (*fl p*); Eucomis bicolor (*fl g*, edged *p*); E. nana (*fl br*); Ferraria Ferrariola (*fl g-br*); F. undulata (*fl g-br*); Francoa ramosa (*fl w*); F. sonchifolia (*fl pi*, often blotched); Gaillardia aristata (*fl y*, styles *r*); Gaura Lindheimeri (*fl pi-w*); Gladiolus blandus (*fl w* and *y*, marked *r*); G. brachyandrus (*fl r*); G. cardinalis (*fl r*, spotted *w*); G. Colvillei (*fl r*, marked *p*); G. C. alba (*fl w*); G. cruentus (*fl r* and *y-w*); G. cuspidatus (*fl p* and *r*, &c.); G. floribundus (*fl w*, *p*, *r*, &c.); G. Papilio (*fl p* and *y*); G. psittacinus (*fl r*, *p*, *y*, and *g*); G. purpureo-auratus (*fl y*, blotched *p*); G. varieties; Gunnera manicata (*fol g*); G. scabra (*fl r*; *fol g*); Helicodiceros crinitus (*fl p-br*); Herbertia cærulea (*fl w* and *b*); Hyacinthus varieties (*fl* variable); Iris susiana (*fl w*, tinged *l*, marked *br-bk*); Lilium cordifolium (*fl y*, *w*, *p*); L. giganteum (*fl w*, tinged *g* and *p*); L. japonicum (*fl w*, tinged *p*); Linum Macraei

Borders (Half-hardy Perennials)—*continued.*

(*fl o*); Lobelia cardinalis (*fl r*); L. fulgens (*fl r*); L. splendens (*fl r*); Morœa edulis (*fl v*, spotted *y*); M. tricuspis (*fl g-w*, spotted *p*); M. unguiculata (*fl w*, spotted *p-r*); Myosotis azorica (*fl p*, at length *b*); Neja gracilis (*fl y*); Nierembergia calycina (*fl y* and *w*); Ophiopogon Jaburan variegatus (*fl v-b*; *fr b*); O. japonicus (*fl w*); O. j. intermedius (*fl w*); Othonnopsis cheirifolia (*fl y*); Pancratium maritimum (*fl w, sc*); Petunia violacea vars. (*fl* variable); Phygelius capensis (*fl r*); Romneya Coulteri (*fl w*); Salvia patens (*fl b*); Saxifraga cortusæfolia (*fl w*); S. Fortunei (*fl w*); Schizostylis coccinea (*fl r*); Scilla chinensis (*fl pi-p*); Sisyrinchium iridifolium (*fl y-w*); Statice callicoma (*fl pi*); S. sinuata (*fl y*); Tephrosia virginiana (*fl y-w*, marked *p*); Tigridia pavonia (*fl o-y*); Tricyrtis hirta (*fl y*, dotted *p*); T. macropoda (*fl w-p*, dotted *p*); Triteleia laxa (*fl b*); T. porrifolia (*fl w-v*); T. uniflora (*fl l*); Tropæolum tricolorum (*fl o, r*, and *bk*); Urginea maritima (*fl w*, keeled *g-p*); Verbena venosa (*fl l* or b); Viola hederacea (*fl b* or *w*); V. pedunculata (*fl y*); Wachendorfia thyrsiflora (*fl y*); Zephyranthes carinata (*fl g* and *pi*); Z. rosea (*fl pi*).

CLIMBERS.—The most desirable herbaceous plants of a scandent or twining habit are here enumerated. By far the larger number of the ornamental Climbers and Twiners grown in our gardens, both outdoors and under glass, are of a shrubby nature: these are classified under the heading **Shrubs.**

Hardy.—ANNUALS.—Amphicarpæa monoica (*fl v* and *w*); Ipomœa purpurea (*fl p*); Lathyrus grandiflorus (*fl pi*); L. odoratus (*fl* variable, *sc*); Maurandya Barclayana (*fl g* and *v-p*); Tropæolum peregrinum (*fl y*).

PERENNIALS.—Apios tuberosa (*fl br-p, sc*); Calystegia dahurica (*fl pi-p*); C. pubescens flore-pleno (*fl w-pi*, changing to *pi*); C. Soldanella (*fl r* and *y*); Cardamine trifolia (*fl w*); Cedronella cordata (*fl p*); Cynanchum roseum (*fl r*); Hablitzia tamnoides (*fl g*); Humulus Lupulus (*fl g-y*); Ipomœa pandurata (*fl w* and *p*); Lathyrus magellanicus (*fl b-p*); L. roseus (*fl pi*); L. rotundifolius (*fl pi*); L. sylvestris platyphyllus (*fl pi*); Mutisia decurrens (*fl o*).

Half-hardy.—ANNUALS.—Grammatocarpus volubilis (*fl y*); Ipomœa hederacea (*fl b*); Trichosanthes anguina (*fl w*; *fr*).

BIENNIAL.—Adlumia cirrhosa (*fl pi*).

PERENNIAL.—Blumenbachia chuquitensis (*fl r* and *y*).

Tender.—ANNUALS.—Citrullus vulgaris (*st, fr*); Ipomœa Bona-nox (*st, fl w*); I. Quamoclit (*st, fl r*); Porana racemosa (*c-h, fl w*); Thunbergia alata (*st, fl y* and *p*); Trichosanthes palmata (*st, fl w*; *fr*).

PERENNIALS.—Alströmeria densiflora (*c-h, fl r*, dotted *bk*); Aristolochia Goldieana (*st, fl g, y*, and *br*); Asparagus scandens (*c-h, fol g*); Batatas bignonioides (*st, fl p*); B. Cavanillesii (*st, fl, w-r*); B. paniculata (*st, fl p*); Blumenbachia contorta (*c-h, fl o-r* and *g*); Bomarea Caldasiana (*c-h, fl o-y*); B. Carderi (*c-h, fl p*, spotted *p-br*); B. oligantha (*c-h, fl r* and *y*); B. Shuttleworthii (*c-h, fl o-r, y*, and *g*); B. Williamsii (*c-h, fl pi*); Campanea grandiflora (*st, fl w* and *r*); Campanumœa gracilis (*st, fl b*); Canavalia bonariensis (*st, fl p*); C. ensiformis (*st, fl w* and *r*); C. obtusifolia (*st, fl p*); Ceropegia elegans (*st, fl p*); C. Gardnerii (*c-h, fl w*, blotched *p*); C. Wightii (*st, fl g* and *p*); Cobœa penduliflora (*i-h, fl g*); C. scandens (*c-h, fl p*); Columnea Schiedeana (*st, fl y* and *br*); Hardenbergia Comptoniana (*c-h, fl p*); H. monophylla (*c-h, fl p*); Kennedya prostrata Marryattæ (*c-h, fl r*); K. rubicunda (*c-h, fl r*); Littonia modesta (*st, fl o*); Maurandya scandens (*c-h, fl p-v*); Momordica Charantia (*st, fl y*; *fr br* or *r*); Myrsiphyllum asparagoides (*c-h, fl g* or *w*; *fol g*); Oxypetalum cæruleum (*i-h, fl b*); Rhodochiton volubile (*c-h, fl r*); Selaginella Willdenovii (*st, fol g*); Swainsona galegifolia (*c-h, fl r*); Testudinaria elephantipes (*c-h, fl g-y*; *fol g*); Thunbergia coccinea (*st, fl r* to *o-pi*); T. fragrans (*st, fl w, sc*); T. laurifolia (*st, fl b*); Tropæolum azureum (*c-h, fl b* and *g-w*); T. Jarrattii (*c-h, fl o-r, y*, and *br*); T. Lobbianum (*c-h, fl o*); T. peregrinum (*c-h, fl y*).

COOL HOUSE.—The term "Cool House" applies equally to the Greenhouse and the Conservatory. Most of the plants are subjects which, though tender, do not require any great degree of heat to bring them to perfection; but a few hardy ones which are indispensable for Cool-house decoration, *e.g.*, Auricula and some of the Liliums, are also included. From 45deg. to 50deg. should be the maximum winter temperature of a structure suited to their requirements. In summer, artificial heat is unnecessary.

ANNUALS.—Ageratum mexicanum (*fl l-b*) and vars.; Amarantus tricolor (*fol p-r* or *r*, and *y*); Browallia demissa (*fl b, r*, or *p*); B. elata (*fl b*) and vars.; B. grandiflora (*fl w* or *l*); Drosera peltata (*fl pi*); D. rotundifolia (*fl w*); Gomphrena globosa (*fl* variable); Helipterum Manglesii (*fl y* or *p*); Impatiens flaccida (*fl p*); Martynia fragrans (*fl r, p, y* throat, *sc*); M. proboscidea (*fl v, y-w*, &c.); Maurandya Barclayana (*fl v-p* and *g*); Nicotiana acutiflora (*fl w*); N. affinis (*fl w, g* outside, *sc*); N. longiflora (*fl w*, turning *p* or *y-g*); Oxalis Barrelieri (*fl y*, spotted *o*); Phlox Drummondii (*fl r*, varying to *pi, p*, or *w*); Porana racemosa (*fl w*); Reseda odorata (*fl y-w*, &c., *sc*); Rhodochiton volubile (*fl r*); Salpiglossis sinuata (*fl p, y-w*, &c.); Salvia coccinea (*fl r*); Schizanthus candida (*fl w*); S. Grahami (*fl l* or *pi*, and *y*) and var.; S. pinnatus (*fl v* or *l, p*, and *y*); Schizopetalon Walkeri (*fl w*); Solanum Melongena (*fl b*; *fr w, y*, or *p*); S. sisymbriifolium (*fl b* or *w*; *fr r*); Waitzia aurea (*fl y*); W. nivea (*fl w*).

BIENNIALS.—Blepharis capensis (*fl b*); Convolvulus erubescens (*fl r-pi*); Echium candicans (*fl b*); Eustoma Russellianum (*fl l-p*); Humea elegans (*fl br-r, pi*, or *r*; *fol g*).

PERENNIALS.—Actinocarpus minor (*aq, fl w*); Actinotus helianthi (*fl w*); Agapanthus umbellatus (*fl b*) and vars.; A. u. variegatus (*fol w*, banded *g*); Agathæa cœlestis (*fl b*); Albuca aurea (*fl y*); A. Nelsoni (*fl w*, striped *r*); Amicia Zygomeris (*fl y* and *p*); Amorphophallus Lacourii (*fol g*, mottled *y*); A. Rivieri (*fl r* and *pi-g*; *fol g*); Amphicome arguta (*fl r*); A. Emodi (*fl pi* and *o*); Aneilema biflora (*fl b*); Anigozanthus coccineus (*fl r*); A. flavidus (*fl y-g*) and vars.; A. pulcherrimus (*fl y*); A. tyrianthinus (*fl p* and *w*); Anomatheca cruenta (*fl r*); Antholyza æthiopica (*fl r* and *g*); A. caffra (*fl r*); A. Cunonia (*fl r* and *bk*); Anthurium cordifolium (*fol g*); A. coriaceum (*fol g*); Arisæma concinna (*fl w*, and *g* or *b-p*); A. curvatum (*fl g, w*, and *br-r*); A. galeata (*fl g, w*, and *p*); A. nepenthoides (*fl y, br*, and *g*); A. speciosa (*fl p, g*, and *w*); Arthropodium neo-caledonicum (*fl w*); A. paniculatum (*fl w*); A. pendulum (*fl w*); Arum palæstinum (*fl p, bk*, and *y-w*); Arundo Donax (*fl r*; *fol g*); Asparagus decumbens (*fol g*); A. scandens (*fol g*); Astilbe japonica (*fl w*); A. j. variegata (*fol* variegated *y*); A. rubra (*fl pi*); Babiana disticha (*fl b, sc*); B. plicata (*fl v-b, sc*); B. ringens (*fl r*); B. stricta (*fl w* and *l-b*, blotched) and vars.; Bæa hygrometrica (*fl b, y* throat); Begonia Evansiana (*fl pi*; *fol g, r* beneath); B. gracilis (*fl pi*); B. natalensis (*fl pi*; *fol g*, spotted *w*); Blandfordia aurea (*fl y*); B. Cunninghamii (*fl r*); B. flammea (*fl y*) and vars.; B. grandiflora (*fl r*); B. nobilis (*fl o* and *y*); Blumenbachia contorta (*fl o-r*); Bravoa geminiflora (*fl o-r*); Brodiæa gracilis (*fl y*, nerved *br*); Brunonia australis (*fl b*); Brunsvigia Cooperi (*fl g-y*, edged *r*); B. falcata (*fl r*); B. Josephinæ (*fl r*); B. multiflora (*fl r*); B. toxicaria (*fl pi*); Bulbine aloides (*fl y*); B. caulescens (*fl y*); Caliphruria Hartwegiana (*fl g-w*); C. subedentata (*fl w*); Callipsycho aurantiaca (*fl o-y*); C. eucrosioides (*fl r* and *g*); C. mirabilis (*fl g-y*); Calochortus albus (*fl w*, blotched); C. Benthami (*fl y*); C. cœruleus (*fl l*, dotted *b*); C. elegans (*fl g-w* and *p*); C. Gunnisoni (*fl l, y-g*, and *p*); C. lilacinus (*fl p*); C. luteus (*fl g* and *y*); C. Nuttallii (*fl g* and *w*, marked *r* and *p*); C. pulchellus (*fl y*); C purpureus (*fl g, p*, and *y*); C. splendens (*fl l*); C. venustus (*fl w* and *r*) and vars.; Calotis cuneifolia (*fl b*); Carpolyza spiralis (*fl w* and *r*); Centropogon fastuosus (*fl pi*); Cephalotus folli-

Cool House (Perennials)—*continued.*

cularis (*fol g, p,* and *r-pi*); Ceropegia Barklyi (*fl pi*); C. Gardnerii (*fl c-w,* blotched *p*); C. Sandersoni (*fl g*); Chænostoma polyantha (*fl l* and *y*); Chironia floribunda (*fl pi*); C. jasminoides (*fl r* or *p*); C. linoides (*fl r*); Cineraria cruenta vars. (*fl*); Clianthus Dampieri (*fl r,* blotched *bk* or *p*); Clivia nobilis (*fl r* and *y*); Cobæa pendulifiora (*fl g*); C. scandens (*fl p*) and var.; Coleus varieties (*fol* variegated); Colocasia esculenta (*fl w; fol g*); Commelina elliptica (*fl w*); Convolvulus mauritanicus (*fl b, w* throat); C. ocellatus (*fl w, r-p* eye); Crinum asiaticum (*fl w,* tube *g*); C. Macowani (*fl w* tinged *p,* and *g*); C. Moorei (*fl w,* flushed *r*); Cyanella odoratissima (*fl pi, sc*); Cyclamen africanum (*fl w* or tinted *r,* spotted *p*); C. cilicicum (*fl w,* blotched *p*); C. Coum (*fl r*) and vars.; C. ibericum (*fl r,* spotted *p; fol* zoned *w*) and vars.; C. neapolitanum (*fl w* or *r,* spotted *v-p*); C. persicum (*fl w,* blotched *p*) and vars.; Cyperus alternifolius (*fol g*); C. a. variegatus (*fol w,* or *g* variegated *w*); Dahlia imperialis (*fl w, l,* and *r*); D. Juarezii (*fl r*); Darlingtonia californica (*fl w* or *g*); Decabelone Barklyi (*fl y-w,* spotted *r*); Dianella lævis (*fl b*); D. tasmanica (*fl b; fr b*); Dianthus Caryophyllus varieties (*fl*); Dionæa muscipula (*s-aq, fl w; fol*); Drimiopsis Kirkii (*fl w*); Drosera binata (*fl w*); D. filiformis (*fl p*); D. spathulata (*fl p*); Dyckia argentea (*fol w*-scaly); Elisena longipetala (*fl w*); Equisetum sylvaticum (*fol g*); Eulalia japonica foliis-striatis (*fol g,* banded *c*); E. j. zebrina (*fol g,* barred *y*); Falkia repens (*fl r*); Fragaria indica (*fl g-y; fr r*); Freesia Leichtlinii (*fl y* or *c, sc*); F. refracta (*fl w* or lined *v,* blotched *o, sc*); Galanthus Elwesii (*fl w,* spotted *g*); G. nivalis (*fl w,* marked *g*) and vars.; G. plicatus (*fl g-w*); Galaxia ovata (*fl y*); Geissorhiza grandis (*fl y* and *r*); G. inflexa (*fl y,* spotted *p*); G. Rochensis (*fl b,* spotted *r*); Gladiolus blandus (*fl w* and *y,* marked *r*); G. brachyandrus (*fl r*); G. cardinalis (*fl r,* spotted *w*); G. Colvillei (*fl r,* marked *p*); G. C. alba (*fl w*); G. cruentus (*fl r* and *y-w*); G. cuspidatus (*fl p* and *r,* &c.); G. floribundus (*fl w, p, r,* &c.); G. Papilio (*fl p* and *y*); G. psittacinus (*fl r, p, y,* and *g*); G. purpureo-auratus (*fl y,* blotched *p*); G. varieties; Gynura aurantiaca (*fl o; fol g, v*-hairy); Hæmanthus natalensis (*fl g* and *o*); Hechtea argentea (*fl w; fol si*); Hedychium flavum (*fl o, sc*); H. Gardnerianum (*fl g-y, sc*); Hesperantha radiata (*fl w,* tinged *r-br*); Hessea crispa (*fl pi*); Hibiscus coccineus (*fl r*); Hippeastrum aulicum (*fl r, g,* and *r-p*); H. pardinum (*fl c,* dotted *r*); H. vittata (*fl w,* striped *r*); H. hybrids; Houttuynia cordata (*fl w; fol g*); Hyacinthus amethystinus (*fl b*); H. corymbosus (*fl l-pi*); H. orientalis (*fl* variable, *sc*); H. o. albulus (*fl w, sc*); H. varieties; Hymenocallis calathinum (*fl w, sc*); Hypoxis stellata (*fl w* and *b*); Imantophyllum Gardeni (*fl r-o* or *y*); I. miniatum (*fl o* and buff); I. hybrids; Ixia capillaris (*fl pi* or *l*); I. hybrida (*fl w*); I. maculata (*fl o*); I. odorata (*fl y, sc*); I. patens (*fl pi*); I. speciosa (*fl r*); I. viridiflora (*fl g,* spotted) and vars.; Kennedya prostrata (*fl r*) and vars.; K. rubicunda (*fl r*); Lachenalia fragrans (*fl y, sc*); L. lilacina (*fl l* and *b*); L. Nelsoni (*fl y*); L. pendula (*fl p, r,* and *y*); L. purpureo-cærulea (*fl p-b*); L. tricolor (*fl g, r,* and *y*); L. t. lutea (*fl y*); Lilium auratum (*fl w,* banded *y,* spotted *p*) and vars.; L. elegans (*fl r*) and vars.; L. giganteum (*fl w,* tinged *g* and *p*); L. japonicum (*fl w,* tinged *p*); L. longiflorum (*fl w, sc*) and var.; L. neilgherrense (*fl w, sc*); L. speciosum (*fl w* and *r*) and vars.; Lobelia Erinus (*fl b, w* or *y* throat) and vars.; L. fulgens (*fl r*); Lotus australis (*fl w,* varying to *p-r*); L. gebelia (*fl r,* turning *pi*); L. jacobæus (*fl bk-p* and *y*); Lycoris aurea (*fl y*); L. Sewerzowi (*fl br-r, sc*); Lythrum Græfferi (*fl pi*); Manulea rubra (*fl y*); Marica lutea (*fl y, r,* and *w*); Maurandya Barclayana (*fl g* and *v-p*); Mimulus moschatus (*fl y; fol sc*); Mirabilis Jalapa (*fl w, y, r,* &c.); Moltkia petræa (*fl v-p*); Moræa edulis (*fl v,* spotted *y*); M. tricuspis (*fl g-w,* spotted *w*); M. unguiculata (*fl w,* spotted *p-r*); Musschia aurea (*fl y*); Myrsiphyllum asparagoides (*fl y* or *w; fol g*);

Cool House (Perennials)—*continued.*

Narcissus biflorus (*fl w, y* crown); N. Bulbocodium (*fl y*) and vars.; N. calathinus (*fl y*); N. incomparabilis (*fl y*) and vars.; N. Jonquilla (*fl y, sc*); N. Macleai (*fl w* and *y*); N. poeticus (*fl w,* crown edged *r, sc*) and vars.; N. Pseudo-Narcissus (*fl y*) and vars.; N. Tazetta (*fl w* and *y,* &c., *sc*) and vars.; N. triandrus (*fl w* or *y,* &c.) and vars.; Nelumbium luteum (*aq, fl y, sc; fol b-g*); N. speciosum (*aq, fl w,* tipped *pi, sc; fol g*); Nemastylis acuta (*fl b, y,* and *bk*); Nerine curvifolia (*fl r*); N. flexuosa (*fl r,* tinged *o*) and vars.; N. sarniensis (*fl pi*) and vars.; N. undulata (*fl w-pi*); Nicotiana suaveolens (*fl w, sc*); Nierembergia filicaulis (*fl l, y* centre); Nolina georgiana (*fl w*); Ornithogalum arabicum (*fl w, bk* eye, *sc*); O. thyrsoides (*fl y*) and vars.; Oxalis Bowiei (*fl pi, y* at base); O. elegans (*fl p*); O. hirta (*fl v* or *r*) and vars.; O. lasiandra (*fl r; fol g,* spotted *p*); O. Martiana (*fl pi*); O. rosea (*fl pi*); O. variabilis (*fl w* or *r*) and vars.; O. versicolor (*fl w, y* outside); Pancratium maritimum (*fl w, sc*); Pelargonium Bowkeri (*fl p* and *y*); P. Endlicherianum (*fl pi,* nerved *p*); P. fissum (*fl pi*); P. pulchellum (*fl w,* spotted *r*); Perilla ocimoides crispa (*fl w; fol p*); Petunia varieties (*fl* variable); Phædranassa rubro-viridis (*fl r* and *g*); Phormium Cookianum (*fl y,* or *y* and *g; fol g*); P. C. variegatum (*fol g* and *c-w*); P. tenax (*fl y* or *r; fol g,* margined *r-br*) and vars.; Phyllostachys nigra (*fol g; stems*); Physalis peruviana violacea (*fl y,* spotted *p; fr v*); Pinguicula caudata (*fl r; fol g,* margined *p*); Podolepis gracilis (*fl p, l,* or *w*); Polianthes tuberosa (*fl w, sc*) and vars.; Prepusa Hookeriana (*fl y-w*); Primula Auricula (*fl* variable, *sc*); P. Boveana (*fl y*); P. cortusoides Sieboldii (*fl pi, w* eye); P. floribunda (*fl y*); P. mollis (*fl pi* and *r*); P. obconica (*fl l* or *p*); P. sinensis (*fl w* or *l*); P. verticillata sinensis (*fl y*); Pterodiscus speciosus (*fl l* or *r*); Ranunculus Lyalli (*fl w*); Richardia africana (*s-aq, fl w,* spadix *y*); R. albo-maculata (*s-aq, fl g-w*); R. melanoleuca (*s-aq, fl y* and *bk-p,* spadix *w*); Romneya Coulteri (*fl w*); Romulea speciosa (*fl pi, y,* and *v*); Salvia cacaliæfolia (*fl b*); S. coccinea (*fl r*); S. gesneræflora (*fl r*); S. ianthina (*fl v-p*); Sandersonia aurantiaca (*fl o*); Sarracenia chelsoni (*fol r*); S. Courtii (*fol r-p*); S. Drummondii (*fl p; fol g, w,* and *p*) and vars.; S. flava (*fl y; fol y, r,* and *p*) and vars.; S. formosa (*fol g* and *r*); S. Mitchelliana (*fol g* veined *r,* turning *r*); S. psittacina (*fl p; fol g, p,* and *w*); S. purpurea (*fl p; fol g,* veined *p*); S. rubra (*fl r-p; fol g,* veined *p*); S. Williamsi (*fol g,* veined *p-r*); Schizostylis coccinea (*fl r*); Senecio speciosus (*fl p*); Solanum sisymbriifolium (*fl b* or *w; fr r*); Sparaxis grandiflora (*fl p, w,* or variegated); S. pendula (*fl l*); S. tricolor (*fl o, y,* and *bk*); S. varieties; Sprekelia formosissima (*fl r* or *w*); Stachys coccinea (*fl r*); Stenomesson coccineum (*fl r*); S. incarnata (*fl r,* &c.); Streptanthera elegans (*fl w, pi, p,* and *y*); Streptocarpus Dunnii (*fl pi,* tinged *r*); S. parviflora (*fl w,* streaked *p*); Stylidium bulbiferum macrocarpum (*fl g-p*); S. graminifolium (*fl pi*); S. spathulatum (*fl y*); Swainsona galegifolia (*fl r*); S. Greyana (*fl pi*); Synnotia variegata (*fl y* and *v*); Theropogon pallidus (*fl w* or tinged *r*); Thysanotus junceus (*fl p*); T. multiflorus prolifer (*fl p*); T. tuberosus (*fl p*); Tigridia atrata (*fl p, g,* and *br*); T. Meleagris (*fl p,* banded *r*); T. Van Houttei (*fl y, l,* and *p*); Trichonium Manglesii (*fl pi* and *w*); Tricyrtis hirta (*fl w,* dotted *p*; T. macropoda (*fl w-p,* dotted *p*); Tritonia crocata (*fl y*); T. crocosmiflora (*fl o-r*); T. miniata (*fl r*); Tropæolum azureum (*fl b, g-w* claw); T. Jarrattii; (*fl o-r* and *y*); T. Lobbianum (*fl o*); T. peregrinum (*fl y*); T. tricolorum (*fl o-r, o,* and *bk*); Utricularia bifida (*fl y*); Vallota purpurea (*fl r*) and vars.; Villarsia parnassifolia (*s-aq, fl y*); V. reniformis (*s-aq, fl y*); Wahlenbergia saxicola (*fl l*); W. tuberosa (*fl w,* banded *pi-r*); Watsonia densiflora (*fl pi-r*); W. Meriana (*fl p* or *r*); W. rosea (*fl pi*); Wigandia macrophylla (*fl l; fol g*); W. Vigieri (*fl l-b,* varying to *r; fol g*); Xanthorrhœa Preissii (*fl w*); Xanthosia rotundifolia (*fl w*); Yucca flexilis ensifolia (*fl w,* tinged *r; fol g*); Zephyranthes Andersoni (*fl y* or *y-br*; Z. candica (*fl w*).

INTERMEDIATE HOUSE.—Plants which require a higher temperature than is usually maintained in the ordinary cool or green-house, but yet need less heat and humidity than stove subjects, are here classified. The following may be taken as the average temperatures of an Intermediate or Warm House: Winter, day, 55deg. to 65deg; night, 50deg. to 55deg. In summer no fire heat is required.

ANNUALS.—Begonia humilis (*fl w*); Celosia argentea (*fl w*); C. cristata (*fl r*) and vars.; C. c. variegata (*fl r*; *fol* variegated); C. Huttonii (*fl r*; *fol r*); C. pyramidalis (*fl* variable); Thunbergia alata (*fl y* and *p*) and vars.

PERENNIALS.—Achimenes grandiflora (*fl v-p*); A. Kleei (*fl l*, *y* mark); A. multiflora (*fl l*); A. ocellata (*fl r-y*, dark spots); A. pedunculata (*fl r*, *y* eye); A. picta (*fl r*, *y* eye); A. varieties; Amorphophallus campanulatus (*fl br*, *r*, and *bk*; *fol g*); Barbacenia purpurea (*fl p*, *sc*); B. Rogieri (*fl p*, *sc*); Batatas bignonioides (*fl p*); B. Cavanillesii (*fl w-r*); B. edulis (*fl w* and *p*); B. paniculata (*fl p*); Begonia acutiloba (*fl w*); B. amabilis (*fl pi* or *w*; *fol g* or variegated); B. amœna (*fl pi*); B. Berkeleyi (*fl pi*); B. boliviensis (*fl r*); B. Bruantii (*fl w* or *pi*; *fol g*, tinted *br*); B. Chelsoni (*fl o-r*); B. Clarkii (*fl r*); B. coriacea (*fl pi*); B. Davisii (*fl r*; *fol g*, *r* beneath); B. Dregii (*fl w*; *fol g*, *w*, and *r*); B. echinosepala (*fl w*); B. eximia (*fol p* and *r*); B. geranifolia (*fl r* and *w*; *fol g*, margined *r*); B. geranioides (*fl w*; *fol g*); B. glandulosa (*fl g-w*; *fol g*); B. herbacea (*fl w*); B. hydrocotylifolia (*fl pi*); B. imperialis (*fol* olive-*g*, banded *gy-g*); B. laciniata (*fl w*, tinted *pi*; *fol g*); B. malabarica (*fl pi*; *fol g*, spotted *w*); B. maxima (*fl w*); B. monoptera (*fl w*; *fol g*, *r* beneath); B. nelumbiifolia (*fol g*); B. octopetala (*fol g*); B. Pearcei (*fl y*; *fol g*, *r* beneath); B. picta (*fl pi*; *fol* sometimes variegated); B. pruinata (*fl w*); B. ricinifolia (*fol* bronzy *g*); B. rubricaulis (*fl w* and *pi*; *fol g*); B. rubro-venia (*fl w*, veined *pi-r*; *fol g*, *w*, and *p-br*); B. scandens (*fl w*; *fol g*); B. Schmidtiana (*fl w*; *fol g*, tinged *r* beneath); B. semperflorens (*fl w* or *pi*; *fol g*) and vars.; B. stigmosa (*fl w*; *fol g* and *br-p*); B. strigillosa (*fl pi*; *fol g*, margined *r*); B. Sutherlandi (*fl o-r*; *fol g*, nerved *r*); B. Veitchii (*fl r*; *fol g*); B. Verschaffeltiana (*fl pi*); B. xanthina (*fl y*; *fol g*, *p* beneath) and vars.; Canna Achiras variegata (*fl r*; *fol g*, striped *w* and *y*); C. Annæi (*fl pi*) and vars.; C. Auguste Ferrier (*fl o-r*; *fol g*, margined *p-r*); C. Bihorelli (*fl r*; *fol* bronzy); C. Depute Henon (*fl y*); C. discolor (*fl r*; *fol g* and *r*); C. expansa-rubra (*fl p*; *fol r*); **C. gigantea (*fl o-r* and *p*); C. indica (*fl r* and *y*);** C. limbata (*fl y-r*); **C. nigricans (*fol r*); C. Rendatleri (*fl pi-r*; *fol g*, tinged *r*); C. speciosa (*fl r*); C. Van Houttei** (*fl r*; *fol g*, margined *p-r*); C. Warscewiczii (*fl r* and *p*; *fol g*, tinged *p*); C. zebrina (*fl o*; *fol g* and *r*); Coleus varieties (*fol* variable); Eurycles Cunninghami (*fl w*); Griffinia Blumenavia (*fl w*, streaked *pi*); G. dryades (*fl p-l* and *w*); G. hyacinthina (*fl b* and *w*); G. ornata (*fl b-l* and *w*); Hippeastrum Ackermanni (*fl r*) and vars.; H. equestre (*fl o-g*) and vars.; H. reticulatum (*fl pi* and *w*, netted); H. hybrids (*fl*); Iresine Herbstii (*fol r*); I. H. aureo-reticulata (*fol g*, blotched *y*); I. Lindenii (*fol r*, banded *p*); Limnocharis Plumieri (*aq*, *fl y*); Littonia modesta (*fl o*); Nymphæa scutifolia (*aq*, *fl b*, *sc*); Oplismenus hirtellus (*fl*); Pellionia Daveauana (*fol g*, tinted *r*); P. pulchra (*fol g* and *bk*, *p* beneath); Phædranassa Carmioli (*fl r*, tipped *g*); P. eucrosioides (*fl g* and *r*); P. Lehmanni (*fl r*); Sagittaria montevidensis (*aq*, *fl w*, spotted *r*); Stenomesson vitellinum (*fl y*); Strelitzia augusta (*fl w*); Streptocarpus Rexii (*fl b*); S. S. Reginæ (*fl o* and *p*); S. Saundersii (*fl b*; *fol y-g*, *pi-p* beneath); Vinca rosea (*fl w*, *p* eye, or *w* or *pi*); Zebrina pendula (*fol g* or variegated); Zephyranthes citrina (*fl y*).

ROCKERIES.—For the accommodation of hardy and half-hardy alpine and other herbaceous plants a Rockery is generally constructed in gardens of any extent. All the best annuals, biennials, and perennials that are suitable for the Rock Garden are here enumerated. Dwarf-growing evergreen shrubs and some of the Yuccas may

Rockeries—*continued.*

be successfully associated with them, in order to improve the appearance of the Rock Garden in winter, when most of the herbaceous subjects have died down. For instructions as to arranging and planting a Rockery, *see* the article on **Garden** in Vol. II.

Hardy.—ANNUALS.—Æthionema saxatilis (*fl p*); Anagallis grandiflora (*fl r*, *b*, &c.); Androsace coronopifolia (*fl w*); Asperula orientalis (*fl b*, *sc*); Bellium bellidioides (*fl w*); Bivonæa lutea (*fl y*); Briza maxima (*fl*); B. minor (*fl*); Campanula Erinus (*fl b-pi* or *w*); Centranthus Calcitrapa (*fl w*, tinged *r*); C. macrosiphon (*fl r*); Delphinium cardinale (*fl r* and *y*); Helianthemum guttatum (*fl y*, spotted *r*); Hutchinsia petræa (*fol g*); Ionopsidium acaule (*fl l*, or *w* tinged *v*); Lupinus nanus (*fl l* and *b*); Malcolmia maritima (*fl l*, *pi*, *r*, or *w*); Œnothera Whitneyi (*fl pi-r*, *w*, &c.); Oxalis valdiviensis (*fl y*, streaked *r*); Sedum cœruleum (*fl b*; *fol g*, spotted *r*); S. glandulosum (*fl r-p*); S. sempervivoides (*fl r*); Silene Atocion (*fl pi*); S. pendula (*fl pi*); S. p. compacta (*fl pi*); Statice Suworowii (*fl l*); Wahlenbergia hederacea (*fl b*).

BIENNIALS.—Bromus brizæformis (*fl*); Campanula thyrsoidea (*fl y*); Celsia cretica (*fl y* spotted); Hesperis tristis (*fl w*, *c*, *br-r*, or *p*, *sc*).

PERENNIALS.—Abronia fragrans (*fl w*, *sc*); Acæna microphylla (*fol g*); A. millefolia (*fol g*); A. myriophylla (*fol g*); A. pulchella (*fol* bronze); Acantholimon glumaceum (*fl pi*); A. venustum (*fl pi*); Achillea Ageratum (*fl w*); A. atrata (*fl w*); A. Clavennæ (*fl w*); A. Herba-rota (*fl w*); A. moschata (*fl w*); A. nana (*fl w*); A. pectinata (*fl w*); A. serrata (*fl w*); A. tomentosa (*fl y*); A. umbellata (*fl y*); Aciphylla Colensoi (*fl w*); A. squarrosa (*fl w*); Acis autumnalis (*fl w*); A. grandiflorus (*fl w*); A. roseus (*fl pi*); A. trichophyllus (*fl w*); Aconitum Anthora (*fl y*); A. biflorum (*fl b*); A. delphinifolium (*fl b-p*); A. Ottonianum (*fl b-w*); A. paniculatum (*fl v*); A. pyrenaicum (*fl y*); A. rostratum (*fl v*); Adenophora periplocæfolia (*fl b*); Adonis pyrenaica (*fl y*); A. vernalis (*fl y*); Æthionema coridifolium (*fl pi-l*); Æ. grandiflorum (*fl pi*); Ajuga genevensis (*fl b*, *pi*, or *w*); Alchemilla alpina (*fol g*); A. sericea (*fol g*, *w* beneath); Alyssum alpestre (*fl y*); A. orientale (*fl* and *fol y*); Androsace carnea (*fl pi*, *y* eye); A. c. eximia (*fl r*, *y* eye); A. Chamæjasme (*fl pi*, *y* eye); A. lactea (*fl w*); A. Laggeri (*fl pi*); A. lanuginosa (*fl pi*, *y* eye); A. sarmentosa (*fl pi*, *w* eye); A. villosa (*fl pi*, *sc*); A. Vitaliana (*fl y*); A. Wulfeniana (*fl pi* or *r*); Anemone alpina (*fl w* and *p*, *c*, *y*, &c.); A. a. sulphurea (*fl y*); A. angulosa (*fl b*); A. apennina (*fl b*); A. baldensis (*fl w*, or *r* tinged *b*); A. blanda (*fl b*); A. fulgens (*fl r*, *bk* centre); A. Halleri (*fl p*); A. japonica (*fl r*); A. j. alba (*fl w*); A. j elegans (*fl pi*); A. multifida (*fl r*, *w-y*, or *y*); A. narcissiflora (*fl c*); A nemorosa (*fl b*); A. n. flore-pleno (*fl w*); A. n. Robinsoniana (*fl b*); A. n. rosea (*fl pi*); A. palmata (*fl y*); A. pratensis (*fl p*); A. Pulsatilla (*fl r*); A. stellata (*fl p*, *pi*, or *w*); Antennaria dioica (*fl pi*); A. d. minima (*fl pi*); A. tomentosa (*fol*); Anthemis Aizoon (*fl w*); Anthyllis erinacea (*fl b-p*); A. montana (*fl pi* or *p*); A. Vulneraria (*fl y*, *w*, *r*, or *p*); Aquilegia alpina (*fl b*, or *b* and *w*); A. Bertoloni (*fl b-v*); A. cærulea (*fl b* and *w*, &c.); A. c. alba (*fl w*); A. c. hybrida (*fl b* and *w*); A. canadensis (*fl r* and *y*); A. glandulosa (*fl l-b* and *w*); A. pyrenaica (*fl l-b*); A. sibirica (*fl l*, or *l* and *w*); Arabis albida (*fl w*); A. a variegata (*fol*); A. alpina (*fl w*); A. arenosa (*fl pi*, *w*, or *b*); A. lucida (*fl w*); A. l. variegata (*fol y* and *g*); A. petræa (*fl w*); A. rosea (*fl pi*); Arenaria balearica (*fl w*); A. graminifolia (*fl w*); A. grandiflora (*fl w*); A. laricifolia (*fl w*); A. purpurascens (*fl p*); A. rotundifolia (*fl w*); Armeria cephalotes (*fl pi* or *r*); A. dianthoides (*fl pi*); A. juncea (*fl pi*); A. juniperifolia (*fl pi*); A. plantaginea (*fl pi*); A. setacea (*fl pi*); A. vulgaris (*fl pi*, *r*, *l*, or *w*); Arnebia echioides (*fl y*); Arnica montana (*fl y*); Artemisia alpina (*fl w*); A. argentea (*fl y*); A. Mutellina (*fol w*); A. Stelleriana (*fol w*); Asarum canadense (*fl br*); A. caudatum (*fl br-r*); A. europæum (*fl br*); Asperula longiflora

Rockeries (Hardy Perennials)—*continued.*

(*fl w, y,* and *r*); A. montana (*fl pi*); A. odorata (*fl w*); Aster Amellus (*fl p*); A. peregrinus (*fl b-p*); A. pyrenæus (*fl l-b* and *y*); A. Reevesi (*fl w, y* centre); Astragalus adsurgens (*fl b-p*); A. arenarius (*fl b*); A. austriacus (*fl b* and *p*); A. hypoglottis (*fl p, b,* and *w*); A. h. alba (*fl w*); A. onobrychioides (*fl pi*); A. pannosus (*fl pi*); A. vimineus (*fl, p-pi* and *w*); Aubrietia deltoidea (*fl p*); A. d. Bougainvillei (*fl v-p*); A. d. Campbelli (*fl v-b*); A. d. Eyrei (*fl v-p*); A. d. græca (*fl p*); A d. purpurea (*fl p*); A. d. violacea (*fl v-p*); Briza media (*fl*); Calliprora lutea (*fl p-b*); Campanula Allionii (*fl b* or *w*); C. alpina (*fl b*); C. barbata (*fl b* or *w*); C. cæspitosa (*fl b* or *w*); C. carpathica (*fl b*); C. c. alba (*fl w*); C. c. pelviformis (*fl l, sc*); C. c. turbinata (*fl p*); C. cenisia (*fl b*); C. Elatines (*fl b-p*); C. fragilis (*fl l-p, w* centre); C. garganica (*fl b*); C. glomerata pusilla (*fl b-v* or *w*); C. isophylla (*fl l-b, yy* centre); C. i. alba (*fl w*); C. Portenschlagiana (*fl b-p*); C. pulla (*fl v-b*); C. pusilla (*fl b,* varying to *w*); C. Raineri (*fl b*); C. rotundifolia (*fl b*); C. r. alba (*fl w*); C. r. Hostii (*fl b*); C. r. soldanellæflora (*fl b*); C. Scheuchzeri (*fl b*); C. Tommasiniana (*fl b*); C. Waldsteiniana (*fl v-b*); C. Zoysii (*fl b*); Cedronella cordata (*fl p*); Centranthus ruber (*fl r* or *w*); Cerastium alpinum (*fl w*); C. Biebersteinii (*fol si*); C. Boissieri (*fl w*); C. tomentosum (*fol si*); Chaptalia tomentosa (*fl w*); Chionodoxa Luciliæ (*fl b, w* centre, or *w*); C. nana (*fl w, l*); Claytonia sibirica (*fl pi*); C. virginica (*fl w*); Colchicum autumnale (*fl p*); C. byzantinum (*fl pi*); Coris monspeliensis (*fl l,* anthers *o*); Coronilla iberica (*fl y*); Corydalis bracteata (*fl y*); C. cava (*fl p*); C. c. albiflora (*fl w*); C. Kolpakowskiana (*fl pi* or *p*); C. lutea (*fl y*); C. Marschalliana (*fl y*); C. nobilis (*fl y,* tipped *g*); C. solida (*fl p*); Crocus aureus (*fl o*); C. biflorus (*fl w,* varying to *l*); C. Boryi (*fl c-w* and *o-y*); C. Imperati (*fl l-p,* lined *p*); C. iridiflorus (*fl p* and *l*); C. nudiflorus (*fl p* or *v*); C. speciosus (*fl l,* striped *p*); C. susianus (*fl o,* or marked *br*); C. vernus (*fl l, v, w,* or streaked *w* and *v*); C. versicolor (*fl p,* varying to *w*); Cyananthus incanus (*fl b*); C. lobatus (*fl p-b*); Dianthus alpestris (*fl r*); D. alpinus (*fl pi*); D. cæsius (*fl pi, sc*); D. cruentus (*fl r*); D. fragrans (*fl w,* suffused *p, sc*); D. glacialis (*fl r-p*); D. monspessulanus (*fl r*); D. neglectus (*fl pi*); D. petræus (*fl pi*); Diapensia lapponica (*fl w*); Dicentra formosa (*fl r*); Dictamnus albus (*fl w* or *p*); Diotis maritima (*fl y*; *fol* woolly); Dodecatheon integrifolium (*fl r*); D. Meadia (*fl pi-p, w,* or *l,* anthers *y*); D. M. frigidum (*fl r-p*); D. M. lancifolium (*fl pi, y* at base); Douglasia nivalis (*fl pi*); Draba aizoides (*fl y*); D. Aizoon (*fl y*); D. alpina (*fl y*); D. glacialis (*fl y*); D. Mawii (*fl w*); D. nivalis (*fl w*); D. violacea (*fl v-p*); Ebenus Sibthorpii (*fl p*); Epilobium obcordatum (*fl pi-p*); Epimedium alpinum (*fl r, y,* and *gy*); E. macranthum (*fl w*); E. Muschianum (*fl w*); E. pinnatum (*fl y*); E. rubrum (*fl r, y,* and *gy*); Erigeron aurantiacus (*fl y*); E. glaucus (*fl p*); E. grandiflorus (*fl p* or *w*); E. multiradiatus (*fl p*); E. speciosus (*fl v* and *y*); Erinus alpinus (*fl p* or *w*); Eritrichum nanum (*fl b, w* eye); Erodium macradenum (*fl v*); E. Manescavi (*fl p-r*); E. petræum (*fl p*); E. Reichardi (*fl w,* veined *pi*); E. trichomanefolium (*fl w-pi*); Erysimum alpinum (*fl y, sc*); E. pumilum (*fl g-y, sc*); Erythræa diffusa (*fl pi*); Erythronium americanum (*fl y*); E. dens-canis (*fl p-pi* or *w*); Funkia ovata (*fl b-l* or *w*); F. o. marginata (*fl b-l* or *w*; *fol g,* margined *w*); F. Sieboldiana (*fl w,* tinged *l*); F. subcordata (*fl w*); Galax aphylla (*fl w*); Gentiana acaulis (*fl b,* marked *y*); G. algida (*fl b,* and *c* marked *b*); G. Andrewsii (*fl b*); G. bavarica (*fl b*); G. cruciata (*fl b,* dotted *g*); G. Kurroo (*fl b,* sprinkled *w*); G. ornata (*fl b* and *w*); G. Pneumonanthe (*fl b, w,* &c.); G. punctata (*fl y,* dotted *p*); G. pyrenaica (*fl b* and *g*); G. septemfida (*fl b*); Geranium argenteum (*fl r,* dark stripes); G. cinereum (*fl r,* dark stripes); G. dahuricum (*fl p*); G. Endressii (*fl pi,* dark veins); G. ibericum (*fl b*); G. Lamberti (*fl l*); G. macrorhizon (*fl r* or *p*); G maculatum (*fl l*); G. sanguineum (*fl r*); G. s. lancastriense (*fl w-pi*); G. striatum (*fl pi,* dark stripes); G. Wallichianum (*fl p*); Geum coccineum (*fl p*); G. elatum (*fl y*); G. montanum (*fl y*); G. pyrenaicum (*fl y*); G. rivale (*fl r*); G. triflorum (*fl p, w,* and *p-r*); Globularia nana (*fl b*); G. vulgaris (*fl b*); Gypsophila cerastioides (*fl w,* veined *r*); G. paniculata (*fl w*); G. Stevenii (*fl w*); Haberlea rhodopensis (*fl l*); Hacquetia Epipactis (*fl y*); Helianthemum formosum (*fl y* and *bk*); H. globulariæfolium (*fl g-y,* spotted *bk*); H. halimifolium (*fl y*); H. scoparium (*fl y*); H. vulgare (*fl y, pi, r,* &c.); Heuchera hispida (*fl* veined *p*; *fol g*); H. sanguinea (*fl r*; *fol g*); Hieracium aurantiacum (*fl o-r*); Houstonia cærulea (*fl b* or *w*); Iberidella rotundifolia (*fl pi-l, y* eye, *sc*); Isopyrum thalictroides (*fl w*; *fol g*); Kœniga spinosa (*fl w*); Leontopodium alpinum (*fl*; *fol* woolly); Leucoium vernum (*fl w,* spotted *g, sc*); Lewisia rediviva (*fl pi, w* centre); Linaria alpina (*fl b-v, y* centre); L. Cymbalaria (*fl b, l,* or *w*; *fol* sometimes variegated); L. hepaticæfolia (*fl l-p*); Linnæa borealis (*fl w-pi, sc*); Linum alpinum (*fl b*); L. narbonense (*fl b* or *w*); Lithospermum Gastoni (*fl b*); L. prostratum (*fl b,* striped *r-v*); L. purpureo-cæruleum (*fl r,* at length *p*); Lotus corniculatus (*fl y*); Lupinus lepidus (*fl p-b,* spotted *w*); Lychnis alpina (*fl pi*); L. fulgens (*fl r*); L. Lagascæ (*fl pi, w* centre); L. pyrenaica (*fl pi*); L. Viscaria (*fl pi* or *r*); Mazus pumilio (*fl v*); Meconopsis cambrica (*fl y*); Merendera Bulbocodium (*fl pi-l*); Mertensia alpina (*fl b*); M. lanceolata (*fl b*); M. sibirica (*fl p-b* or *w*); M. virginica (*fl p-b*); Meum athamanticum (*fl w*); Micromeria Piperella (*fl*); Mimulus primuloides (*fl y*); Mitchella repens (*fl w,* tinged *p*); Mitella diphylla (*fl w*); M. pentandra (*fl y*); Mœhringia muscosa (*fl w*); Myosotis alpestris (*fl b, y* eye, *sc*); M. dissitiflora (*fl b*); Nertera depressa (*fr o*); Œnothera acaulis (*fl w,* fading to *r*); Œ. eximia (*fl w*); Œ. taraxacifolia (*fl w,* fading to *r*); Omphalodes Luciliæ (*fl l-b*); O. verna (*fl b,* throat *w*); Ononis Natrix (*fl y,* veined *r*); Onosma stellulatum tauricum (*fl y*); Ourisia coccinea (*fl r,* anthers *c*); O. Pearcei (*fl r*); Oxalis Acetosella (*fl w,* veined *p*); O. enneaphylla (*fl w* or *pi,* veined *p*); O. lobata (*fl y,* spotted *r*); O. tetraphylla (*fl r* or *p-v*); Oxytropis Lambertii (*fl pi-r*); O. montana (*fl b*); O. pyrenaica (*fl b*); Papaver alpinum (*fl y, pi,* or *w*); P. nudicaule (*fl y* or *w*); Pentstemon antirrhinoides (*fl y*); P. azureus (*fl b, r-p* at base); P. barbatus (*fl r*) and var.; P. campanulatus (*fl pi, v,* &c.); P. confertus (*fl g-y*); P. deustus (*fl y*); P. diffusus (*fl p*); P. Eatoni (*fl r*); P. glaber (*fl p, v,* or *b*); P. gracilis (*fl l-p* or *w*); P. Hartwegi (*fl r*); P. heterophyllus (*fl pi* or *pi-p*); P. Menziesii Douglasii (*fl l-p, pi-r* at base); P. Murrayanus (*fl r*); P. pubescens (*fl v* or *p,* or partly *w*); P. venustus (*fl p*); Petasites fragrans (*fl w, sc*); P. frigida (*fl w*); Phlox amœna (*fl p, pi,* or *w*); P. divaricata (*fl l* or *b*); P. reptans (*fl p* or *v*); P. subulata (*fl pi* or *w*); Phyteuma comosum (*fl p* or *b*); P. humile (*fl b*); Polemonium confertum (*fl b*); Polygonum affine (*fl pi-r*); P. vaccinifolium (*fl pi*); Potentilla alpestris (*fl y*); P. ambigua (*fl y*); P. nitida (*fl pi*); Pratia angulata (*fl w*); P. repens (*fl w,* tinged *v*); Primula Allionii (*fl mv, w* eye); P. altaica (*fl mv* or *p-r, y* eye); P. Auricula (*fl* variable); P. auriculata (*fl p, w* eye); P. calycina (*fl p*); P. capitata (*fl v-b*); P. cortusoides (*fl pi*); P. denticulata (*fl l*); P. d. cashmeriana (*fl p, y* eye); P. farinosa (*fl p, y* eye); P. glutinosa (*fl b-p*); P. japonica (*fl* variable); P. marginata (*fl pi-v*); P. minima (*fl pi* or *w*); P. nivalis (*fl w*); P. Parryi (*fl p, y* eye); P. rosea (*fl pi-r, y* eye); P. scotica (*fl p, y* eye); P. sikkimensis (*fl y*); P. spectabilis Wulfeniana (*fl pi-p*); P. Steinii (*fl p*); P. Stuartii (*fl y*); P. viscosa (*fl pi-p, w* eye); P. v. pedemontana (*fl pi-p, y-w* eye); P. vulgaris (*fl y*); Puschkinia scilloides (*fl w,* striped *b*); Pyrola rotundifolia (*fl w, sc*); P. secunda (*fl g-w*); Ramondia pyrenaica (*fl p* or *w*); Ranunculus aconitifolius (*fl w*); R. amplexicaulis (*fl w*); R. anemonoides (*fl w,* tinted *pi*); R. asiaticus (*fl* variable); R. a. sanguineus

Rockeries (Hardy Perennials)—*continued.*

(*fl p, y, o,* or variegated); R. cortussæfolius (*fl y*); R. gramineus (*fl y*); R. parnassifolius (*fl w* or *pi*); Romanzoffia sitchensis (*fl w*); Sanguinaria canadensis (*fl w*); Saponaria ocymoides (*fl r* or *pi*); Saxifraga aizoides (*fl o* or *y*, dotted *r*); S. aretioides (*fl y*); S. Burseriana (*fl c-w*); S. B. major (*fl w*); S. cæsia (*fl c-w*); S. cæspitosa (*fl w*); S. Camposii (*fl w*); S. Cotyledon (*fl w*; *fol* edged *w*); S. crassifolia (*fl r*); S. diversifolia (*fl y*); S. granulata (*fl w*); S. Hirculus (*fl* dotted *r*); S. Hostii (*fl w*, or *p*-dotted); S. hypnoides (*fl w*); S. ligulata (*fl r-w*); S. lingulata cochlearis (*fl w*; *fol g*); S. longifolia (*fl w*, dotted *r*; *fol g*); S. Maweana (*fl w*); S. moschata (*fl y* or *p*); S. oppositifolia (*fl p*); S. o. pyrenaica superba (*fl pi-l*); S. retusa (*fl p*; *fol* dotted); S. Rocheliana coriophylla (*fl w*); S. sancta (*fl y*); S. sarmentosa (*fl w*, spotted *r* and *y*; *fol g*, *p* beneath); S. Stracheyi (*fl pi*); S. umbrosa (*fl w*, marked *r*); S. valdensis (*fl w*); S. virginiensis (*fl w*); Scutellaria alpina (*fl p*); S. orientalis (*fl y*); Sedum acre aureum (*fol y*); S. Aizoon (*fl y*); S. album (*fl w*; *fol g* and *br*); S. anglicum (*fl w* or *pi*; *fol g*); S. brevifolium (*fl w*, ribbed *pi*; *fol pi*); S. erythrostictum (*fl g*, flushed *pi*); S. glaucum (*fl pi-w*; *fol g* and *r*); S. japonicum (*fl y*; *fol g*); S. kamtschaticum (*fl y*; *fol g*); S. lydium (*fl pi*; *fol g*, tipped *r*); S. maximum (*fl w*, spotted *r*; *fol g*); S. m. hæmatodes (*fol p*); S. pulchellum (*fl pi-p*); S. reflexum (*fl y*); S. Rhodiola (*fl g* or *r-p*); S. spectabile (*fl pi*); Sempervivum arachnoideum (*fl r*; *fol g* and *br*) and var.; S. arenarium (*fl y*); S. atlanticum (*fl r*; *fol g* and *r-br*); S. Boissieri (*fl r*; *fol g*); S. Braunii (*fl y*; *fol g*); S. calcaratum (*fl r-w*; *fol g*, tipped *r-br*); S. calcareum (*fl r*; *fol g*, tipped *r-br*); S. fimbriatum (*fl r*; *fol g* and *r*); S. Funckii (*fl r-p*; *fol g*); S. Heuffelii (*fl y*; *fol g*, tinted *r-br*); S. Lamottei (*fl pi*; *fol g*, tipped *r-br*); S. montanum (*fl p*; *fol g*); S. Pomelii (*fl pi-r*; *fol g*); S. soboliferum (*fl y*; *fol g*, tipped *r-br*); S. Wulfeni (*fl y*; *fol g*, tipped *r-br*); Silene acaulis (*fl pi* or *w*); S. alpestris (*fl w*); S. Elizabethæ (*fl pi*, *w*, and *p*); S. Hookeri (*fl pi*); S. maritima (*fl w*); S. pennsylvanica (*fl pi*); S. Saxifraga (*fl y* and *r-br*); S. Schafta (*fl p*); S. virginica (*fl r*); Soldanella alpina (*fl v*); S. montana (*fl p*); Statice latifolia (*fl b*); S. tatarica (*fl r*); Tiarella cordifolia (*fl w*); Trifolium alpestre (*fl p*); T. uniflorum (*fl b* and *p*); Vicia argentea (*fl pi*, spotted *bk*); Vinca major (*fl b-p*); V. minor (*fl v-p*, *w*, or *b*); Viola cornuta (*fl b*); V. cucullata (*fl v-b* or *p*) and var.; V. Munbyana (*fl v* or *y*) and var.; V. odorata (*fl b*, *v*, or *v-p*, *sc*) and vars.; V. pedata (*fl b* or *w*) and vars.; V. rothomagensis (*fl b*, striped *bk*); V. suavis (*fl b* and *w*, *sc*); V. tricolor (*fl* variable) and vars.; Wahlenbergia Kitaibelii (*fl b*); W. tenuifolia (*fl v-b*, *w* base); Wulfenia Amherstiana (*fl b*); W. carinthiaca (*fl b*).

Half-Hardy.—ANNUALS.—Abronia umbellata (*fl pi*, *sc*); Calceolaria chelidonioides (*fl y*); Grammanthes chloræflora (*fl o-y*, at length *o-r*); Grammatocarpus volubilis (*fl y*); Laurentia minuta (*fl p*); Loasa hispida (*fl y*, centre *g* and *w*); L. vulcanica (*fl w*); Martynia fragrans (*fl r-p*, throat *y*, *sc*); M. lutea (*fl o-y*, suffused *r*); M. proboscidea (*fl y*, *g*, *v*, &c.); Mentzelia bartonioides (*fl y*); Portulaca vars. (*fl*).

PERENNIALS.—Amphicome arguta (*fl r*); A. Emodi (*fl pi* and *o*); Antirrhinum Asarina (*fl w* and *y*, spotted *p*); A. molle (*fl w* and *y*, striped *p*); Arabis blepharophylla (*fl pi*); Bellium minutum (*fl w* and *y*); Chionographis japonica (*fl w*); Darlingtonia californica (*fl w* or *g*, marked *r-br*; pitchers *g*, marked *w* and *r-br*); Myosotis azorica (*fl p*, at length *b*); Oxalis arenaria (*fl v-p*); Saxifraga cortusæfolia (*fl w*); S. Fortunei (*fl w*); Statice callicoma (*fl pi*); S. sinuata (*fl p*, *y*); Viola hederacea (*fl b* or *w*); V. pedunculata (*fl y*).

SHRUBBERIES.—Many hardy herbaceous plants may be introduced with good effect into the Shrubbery, although the latter term, strictly speaking, means a plantation of shrubs. Shade-loving subjects, and such as are found growing in woodlands in their native countries, are eminently suited for the purpose. The following lists

Shrubberies—*continued.*

comprise most of the hardy herbaceous plants that will thrive in the Shrubbery.

ANNUALS.—Adonis æstivalis (*fl r*); A. autumnalis (*fl r*); Agrostemma cœli-rosa (*fl pi*, *w*, or *p*); A. c-r. fimbriata (*fl p*); Agrostis nebulosa (*fl*); A. pulchella (*fl*); Anagallis grandiflora (*fl r*, *b*, &c.) and vars.; Argemone albiflora (*fl w*); A. hirsuta (*fl w*); A. ochroleuca (*fl y*); Bartonia albescens (*fl y*); B. aurea (*fl y*); Blumenbachia insignis (*fl w*); Calendula maderensis (*fl o*); C. officinalis (*fl o*); Callistephus chinensis (*fl p*, &c.); Centaurea Cyanus (*fl p* and *b*); C. suaveolens (*fl y*, *sc*); Centranthus macrosiphon (*fl r* or *w*); Chlora perfoliata (*fl y*); Chrysanthemum carinatum (*fl w*, *p*); C. coronarium (*fl y*); C. segetum (*fl y*); C. s. grandiflorum (*fl y*); Clarkia elegans (*fl r*); C. pulchella (*fl p*); Collinsia bicolor (*fl w* and *pi-p*); C. grandiflora (*fl p* and *b*); C. verna (*fl w* and *b*); Convolvulus tricolor (*fl y*, *b*, and *w*); Coreopsis Drummondi (*fl y*, banded *r-br*); C. tinctoria (*fl y*, blotched *p-br*); Crepis rubra (*fl r*); Delphinium Ajacis (*fl b*, *r*, or *w*); Erysimum Perofskianum (*fl o-y*); Eucharidium concinnum (*fl l-p*); Gaillardia amblyodon (*fl r*); Gilia achilleæfolia (*fl p-b*, *w*, or *r*); G. androsacea (*fl l*, *p*, or *w*, *y* or dark throat); G. capitata (*fl b*); G. liniflora (*fl w*); G. tricolor (*fl o-y*, *p*, and *w*, &c.); Glaucium phœniceum (*fl r*, spotted *bk*); Helianthus annuus (*fl* variable, usually *y*); Hordeum jubatum (*fl*); Impatiens coronaria (*fl w*); I. Roylei (*fl p*); Linaria bipartita (*fl v-p*, *o*, and *w*); L. reticulata (*fl p* and *w*); L. spartea (*fl y*); Linum grandiflorum (*fl pi*); L. g. rubrum (*fl r-pi*); Loasa Pentlandii (*fl o*); Lupinus nanus (*fl l* and *b*); Madia elegans (*fl y*); Malcolmia maritima (*fl l*, *pi*, *r*, or *w*); Malope trifida (*fl p* or *w*); Matricaria inodora flore-pleno (*fl w*); Nemophila insignis (*fl b*, *w* eye, &c.) and vars.; Nigella damascena (*fl w* or *b*); N. hispanica (*fl b*, *r* stamens); Œnothera amœna (*fl pi*, spotted *r*); Œ. a. rubicunda (*fl l-p*, blotched); Œ. bistorta Veitchiana (*fl y*, spotted *r*); Œ. Whitneyi (*fl pi-r*, blotched *r*); Oxalis corniculata (*fl y*); O. c. rubra (*fl y*; *fol p*); O. valdiviensis (*fl y*, striped *r*); Panicum capillare (*fl*); P. miliaceum (*fl*); Papaver Rhœas (*fl r*) and vars.; P. somniferum (*fl* variable); Phacelia campanularia (*fl b*, spotted *w*); P. viscida (*fl b*, *p*); P. Whitlavia (*fl b*); Polygonum orientale (*fl pi-p* or *w*); Reseda odorata (*fl y-w*, &c.); Saponaria calabrica (*fl w*); Scabiosa atropurpurea (*fl r*) and vars.; Schizanthus pinnatus (*fl v* or *l*, and *y*, &c.) and vars.; Silene pendula (*fl pi*); S. p. compacta (*fl pi*); Silybum Marianum (*fl pi-p*); Tagetes erecta (*fl y*); T. patula (*fl y* or *y-br*); T. tenuifolia (*fl y*); Vesicaria grandiflora (*fl y*); Vicia onobrychioides (*fl p*); Xeranthemum annuum (*fl p*).

BIENNIALS.—Althæa caribæa (*fl pi*); Aster Bigelovii (*fl l* and *y*); Bromus brizæformis (*fl*); Campanula Medium (*fl b*, *p*, and *w*); C. sibirica divergens (*fl v*); Centaurea Fenzlii (*fl y*); Chlora grandiflora (*fl y*); Digitalis purpurea (*fl p*, varying to *w*); Glaucium flavum (*fl o*); Grindelia grandiflora (*fl y* or *o*); Michauxia lævigata (*fl w*); Myosotis sylvatica (*fl b*, *y* throat); Œnothera biennis (*fl y*, *sc*); Oxalis corniculata rubra (*fl y*; *fol p*); Tragopogon glaber (*fl p*); Verbascum Chaixii (*fl y*).

PERENNIALS.—Aconitum album (*fl w*); A. angustifolium (*fl b*); A. Anthora (*fl y*); A. A. nemorosum (*fl y*); A. autumnale (*fl b-p*); A. barbatum (*fl c*); A. chinense (*fl b*); A. eminens (*fl b*); A. gracile (*fl b* or *v*); A. Halleri (*fl v*); A. H. bicolor (*fl w*, variegated *b*); A. japonicum (*fl pi*); A. lycoctonum (*fl v*); A. Napellus (*fl b*); A. ochroleucum (*fl c*); A. Ottonianum (*fl b*, variegated *w*); A. paniculatum (*fl v*); A. pyrenaicum (*fl y*); A. rostratum (*fl v*); A. tauricum (*fl b*); A. uncinatum (*fl b*); A. variegatum (*fl b*); A. v. albiflorum (*fl w*); A. v. bicolor (*fl w-b*); A. vulparia (*fl y*); A. v. septentrionale (*fl b*); A. Willdenovii (*fl b-p*); Actæa alba (*fl w*); A. spicata (*fl w* or *b*); A. s. rubra (*fl w* or *b*; *fr r*); Actinomeris helianthoides (*fl y*); A. procera (*fl y*); A. squarrosa (*fl y*); Adonis pyrenaica (*fl y*); A. vernalis (*fl y*); Agrostemma coronaria (*fl w*, *r* centre, &c.); A. flos-Jovis

Shrubberies (Perennials)—*continued.*

(*fl p* or *r*); Amsonia salicifolia (*fl b*); A. Tabernæmontana (*fl b*); Anemone decapetala (*fl c* or *y*); A. dichotoma (*fl w*, tinged *r*); A. fulgens (*fl r*, *bk* centre); A. nemorosa (*fl w*); A. n. cærulea (*fl b*); A. n. flore-pleno (*fl w*); A. n. Robinsoniana (*fl b*); A. n. rosea (*fl pi*); A. ranunculoides (*fl y* or *p*); A. sylvestris (*fl w*); A. virginiana (*fl p* or *p-g*); Antirrhinum majus (*fl*); Apocynum androsæmifolium (*fl r*); Aralia edulis (*fol g*); A. nudicaulis (*fol g*); A. racemosa (*fol g*); Artemisia cana (*fol w*); Arum italicum (*fl g-y* or *w*); A. proboscideum (*fl g-p*); A. tenuifolium (*fl w*); Asperula longiflora (*fl w*, *y*, and *r*); A. montana (*fl pi*); A. odorata (*fl w*); Astrantia carniolica (*fl w*; *fol g*, tinged *r*); A. helleborifolia (*fl pi*); A. major (*fl pi*); Berkheya purpurea (*fl p*); Boltonia asteroides (*fl pi*); B. glastifolia (*fl pi*); Brodiæa congesta (*fl b*); B. c. alba (*fl w*); Bulbocodium vernum (*fl v-p*, *w* spot); Buphthalmum speciosissimum (*fl y*); Callirhoe digitata (*fl r-p*); C. Papaver (*fl v-r*); Centaurea alpina (*fl y*); C. atropurpurea (*fl p*); C. aurea (*fl y*); C. babylonica *fl y*); C. macrocephala (*fl y*); Centranthus ruber (*fl r*); Chelone Lyoni (*fl p*); C. nemorosa (*fl pi-p*); Cimicifuga americana (*fl w*); C. japonica (*fl w*); C. racemosa (*fl w*); Clematis aromatica (*fl v-b*, *sc*); Clintonia Andrewsiana (*fl pi*); Cnicus altissimus (*fl p*); Convallaria majalis (*fl w*, *sc*); Coreopsis grandiflora (*fl y*); Corydalis bracteata (*fl y*); C. cava (*fl p*); C. c. albiflora (*fl w*); C. Kolpakowskiana (*fl pi* or *p*); C. lutea (*fl y*); C. Marschalliana (*fl y*); C. nobilis (*fl y*, tipped *g*); C. solida (*fl p*); Crambe cordifolia (*fl w*); Datisca cannabina (*fl y*; *fol g*); Delphinium azureum (*fl b*); D. cashmirianum (*fl b*); D. exaltatum (*fl b* or *w*); D. formosum (*fl b*); D. grandiflorum (*fl b*, varying to *w*); D. nudicaule (*fl r* and *y*); Dentaria digitata (*fl p*); D. diphylla (*fl w* and *p*); Dicentra spectabilis (*fl pi-r*); Digitalis ambigua (*fl y*, reticulated *br*); Doronicum plantagineum excelsum (*fl y*); Dracunculus vulgaris (*fl br*); Epilobium angustifolium (*fl r*); E. Dodonæi (*fl pi*); E. hirsutum (*fl pi* or *w*); E. rosmarinifolium (*fl r*); Eranthis hyemalis (*fl y*); E. sibiricus (*fl y*); Erythronium americanum (*fl y*); E. dens-canis (*fl p-pi* or *w*); Funkia ovata (*fl b-l* or *w*); F. o. marginata (*fl b-l* or *w*; *fol g*, margined *w*); F. Sieboldiana (*fl w*, tinged *l*); F. subcordata (*fl w*); Galanthus Elwesii (*fl w*, spotted *g*); G. nivalis (*fl w*, marked *g*); G. plicatus (*fl g-w*); Gladiolus Brenchleyensis (*fl r*); Gynerium argenteum (*fl* silky, sometimes tinted *p* or *y*); Helenium autumnale (*fl y*); Helianthus decapetalus multiflorus (*fl y*); H. orgyalis (*fl y*); H. rigidus (*fl br* and *y*); Hemerocallis Dumortieri (*fl o-y*, tinged *br*); H. flava (*fl o-y*, *sc*); H. fulva (*fl y*); H. Middendorfi (*fl y*); H. minor (*fl y*); Inula glandulosa (*fl y*); I. Hookeri (*fl y*, *sc*); Kniphofia aloides (*fl* coral-*r*, fading to *g-y*); K. Burchelli (*fl r* and *y*, tipped *g*); K. Leichtlinii (*fl r* and *y*); K. Rooperi (*fl o-r*, turning *y*); Leucoium æstivum (*fl w*, tipped *g*); L. vernum (*fl w*, spotted *g*, *sc*); Lilium bulbiferum (*fl r*); L. canadense (*fl y* to *r*, spotted *r-p*); L. candidum (*fl w*, rarely tinged *p*); L. Catesbæi (*fl o-r*, spotted *p*); L. chalcedonicum (*fl r*, rarely *y*); L. columbianum Buschianum (*fl r*, spotted *bk* below); L. croceum (*fl y*, tinted *r*); L. davuricum (*fl r*); L. elegans (*fl r*, rarely spotted); L. e. armeniacum (*fl r*, spotted *y*); L. e. atrosanguineum (*fl* blotched *r*); L. e. sanguineum (*fl r* and *y*); L. Hansoni (*fl r-o*, dotted *p*); L. Krameri (*fl w*, tinged *r*, *sc*); L. Leichtlinii (*fl y*, marked *p* and *r*); L. longiflorum (*fl w*, *sc*); L. l. eximium (*fl w*); L. Martagon (*fl p-r*, spotted *p*); L. monadelphum (*fl y*, tinged *r* at base) and var.; L. oxypetalum (*fl l-p*, dotted *p* within); L. pardalinum (*fl o-r*, variable); L. Parryi (*fl y*, spotted *br-r*, *sc*); L. philadelphicum (*fl o-r*, spotted *p* below); L. pomponium (*fl r*); L. pseudo-tigrinum (*fl r*, spotted *bk* within); L. pyrenaicum (*fl y*); L. roseum (*fl l*); L. speciosum (*fl w*, or spotted *r*); L. s. albiflorum (*fl w*); L. s. punctatum (*fl w*, spotted *r*); L. s. roseum (*fl w*, tinted *pi*); L. superbum (*fl o-r*, spotted); L. tenuifolium (*fl*); L. tigrinum (*fl o-r*, spotted *p-bk*) and vars.; L. Washingtonianum (*fl w*, tinted

Shrubberies (Perennials)—*continued.*

p or *l*); Melittis Melissophyllum (*fl c-w*, spotted *pi* or *p*); Mertensia alpina (*fl b*); M. lanceolata (*fl b*); M. sibirica (*fl p-b* or *w*); M. virginica (*fl p-b*); Meum athamanticum (*fl w*); Myrrhis odorata (*fl w*); Narcissus biflorus (*fl w*, *y* crown); N. Bulbocodium (*fl y*) and vars.; N. incomparabilis (*fl y*) and vars.; N. Jonquilla (*fl y*, *sc*); N. Macleai (*fl w* and *y*); N. poeticus (*fl w*, crown edged *r*, *sc*) and vars.; N. Pseudo-Narcissus (*fl y*) and vars.; N. Tazetta (*fl w* and *y*, &c., *sc*) and vars.; N. triandrus (*fl w* or *y*, &c.) and vars.; Œnothera acaulis (*fl w*, turning *r*); Œ. californica (*fl w*, varying to *pi*, *y* centre, *sc*); Œ. eximia (*fl w*); Œ. glauca (*fl y*); Œ. g. Fraseri (*fl y*); Œ. linearis (*fl y*, *sc*); Œ. missouriensis latifolia (*fl y*); Œ. pallida (*fl w*, *y* at base); Œ. speciosa (*fl w*, fading to *r*); Œ. taraxacifolia (*fl w*, fading to *r*); Omphalodes nitida (*fl w*); O. verna (*fl b*, throat *w*); Onopordon Acanthium (*fl p*); Ornithogalum narbonense (*fl w*, striped *g*); O. nutans (*fl w* and *g*); O. pyramidale (*fl w*, striped *g*); O. umbellatum (*fl w* and *g*); Oxalis Acetosella (*fl w*, veined *p*); O. lobata (*fl y*, spotted *r*); O. tetraphylla (*fl r* or *p-v*); Pæonia albiflora (*fl w*, *p*, &c.) and vars.; P. Emodi (*fl w*); P. officinalis (*fl r*); P. tenuifolia (*fl r*); P. Wittmanniana (*fl y-w*); Panicum virgatum (*fl*); Papaver bracteatum (*fl r*); P. nudicaule (*fl y* or *w*); P. orientale (*fl r*, spotted *p*); P. pilosum (*fl r* or *o*, marked *w*); Petasites fragrans (*fl w*, *sc*); P. frigida (*fl w*); Phalaris arundinacea (*fl p*); Phlomis herba-venti (*fl b-v*); Phytolacca decandra (*fl w*; *fr p*); Polemonium cæruleum (*fl b*; *fol* sometimes variegated); P. humile (*fl b* or *p*) and var.; P. reptans (*fl b* or *w*); Polygonatum biflorum (*fl g*); P. multiflorum (*fl w*; *fr bk*) and vars.; Polygonum affine (*fl pi-r*); P. amplexicaule (*fl pi-r* or *w*); P. compactum (*fl w*); P. cuspidatum (*fl c-w*); P. sachalinense (*fl g-y*); Potentilla ambigua (*fl y*); P. argyrophylla (*fl y*); P. congesta (*fl w*); P. Hopwoodiana (*fl* variegated *pi* and *y*); P. nitida (*fl pi*); P. unguiculata (*fl w*); Prenanthes purpurea (*fl p*); Primula Auricula (*fl* variable); P. elatior (*fl y*); P. japonica (*fl* variable); P. officinalis (*fl y*); P. vulgaris (*fl y*); Pulmonaria angustifolia (*fl pi*, at length *b*); P. saccharata (*fl pi*); Pyrethrum Tchihatchewii (*fl w* and *y*); Rheum Emodi (*fol g*); R. officinale (*fol g*); Rudbeckia grandiflora (*fl y* and *p*); R. maxima (*fl y*); R. pinnata (*fl y*); R. purpurea (*fl r-p*, tipped *g*); R. speciosa (*fl o* and *bk-p*); Sanguinaria canadensis (*fl w*); Saponaria officinalis (*fl l* or *w*); Saussurea pulchella (*fl p*); Saxifraga Camposii (*fl w*); S. Cotyledon (*fl w*; *fol* edged *w*); S. crassifolia (*fl r*); S. granulata (*fl w*); S. hypnoides (*fl w*); S. ligulata (*fl r-w*); S. Stracheyi (*fl pi*); S. umbrosa (*fl w*, marked *r*); Scabiosa amœna (*fl l* or *pi*); Scilla amœna (*fl b* or *w*); S. hispanica (*fl b*, *w*, &c.); S. nutans (*fl b*, *p*, *w*, or *pi*); S. peruviana (*fl l*, *r* or *w*); S. pratensis (*fl b*); S. sibirica (*fl b*); Scolymus grandiflorus (*fl y*); Scopolia carniolica (*fl r*, *y* or *g* within); Sedum acre aureum (*fol y*); S. album (*fl w*; *fol g* and *br*); S. dasyphyllum (*fl pi*); S. erythrostictum (*fl g*, flushed *pi*); S. glaucum (*fl pi-w*; *fol g* and *r*); S. kamtschaticum (*fl y*; *fol g*); S. Maximowiczii (*fl y*; *fol g*); S. maximum (*fl w*, spotted *r*; *fol g*); S. m. hæmatodes (*fol p*); S. populifolium (*fl w* or *pi*); S. reflexum (*fl y*); S. Rhodiola (*fl g* or *r-p*); S. sexangulare (*fl y*; *fol g*); S. spectabile (*fl pi*); S. Telephium (*fl pi* or *w*) and vars.; Senecio Doria (*fl y*); S. Doronicum (*fl y*); S. pulcher (*fl p*, disk *y*); Sida Napæa (*fl w*); Silene pennsylvanica (*fl pi*); Solidago Drummondii (*fl y*); S. lanceolata (*fl y*); S. speciosa (*fl y*); S. Virgaurea (*fl y*); Spiræa Aruncus (*fl w*); S. astilboides (*fl w*); S. Filipendula (*fl w* or *p*); S. palmata (*fl r*); S. Ulmaria (*fl w*); Stachys grandiflora (*fl v*); S. lanata (*fl* striped); S. Maweana (*fl y-w*, blotched *p*); Stipa pennata (*fl*); Streptopus roseus (*fl p*); Stylophorum diphyllum (*fl y*); Symphytum caucasicum (*fl b*); S. officinale bohemicum (*fl r* or *r-p*); S. tuberosum (*fl y*); Tanacetum leucophyllum (*fl y*; *fol y-w*); Teucrium Chamædrys (*fl pi*, spotted *w* and *r*); Thalictrum aquilegifolium (*fl w*); T. a. atropurpureum (*fl w* and *p*); T. flavum (*fl y*); T. minus (*fl y*

Shrubberies (Perennials)—*continued.*

and *g*); T. tuberosum (*fl w*); Tradescantia virginica (*fl v, p*, or *w*); Trillium erectum (*fl p*); T. erythrocarpum (*fl w*, striped *p*); T. grandiflorum (*fl w*, turning *pi*); T. nivale (*fl w*); Trollius altaicus (*fl o* or *y*); T. asiaticus (*fl y*); T. europæus (*fl y*); Tulipa australis (*fl* flushed *r*); T. Clusiana (*fl w, r*, and *bk*); T. Eichleri (*fl r*, marked *y* and *bk*); T. elegans (*fl r, y* eye); T. Gesneriana (*fl r, y*, &c.); T. Greigi (*fl r*, blotched *bk*); T. macrospeila (*fl r*, blotched *bk* and *y*); T. Oculus-solis (*fl r*, blotched *bk*); T. præcox (*fl r*, blotched *bk*); T. pubescens (*fl* variable, *sc*); T. retroflexa (*fl y*); T. suaveolens (*fl r* and *y, sc*); T. sylvestris (*fl y, sc*); T. varieties (*fl*); Tussilago Farfara variegata (*fol g* and *c-w*); Valeriana Phu aurea (*fl w*; *fol g* and *y*); Veratrum album (*fl w* and *g*); V. nigrum (*fl b* & *p*); Veronica gentianoides (*fl b*); V. incana (*fl b*); V. longifolia (*fl l*); V. saxatilis (*fl b*); V. spicata (*fl b*); V. Teucrium (*fl b*); V. virginica (*fl w* or *b*); Vesicaria utriculata (*fl y*); Vicia argentea (*fl pi*, spotted *bk*); V. oroboides (*fl b*); Vinca major (*fl b-p*); V. minor (*fl v-p, w*, or *b*); Viola cornuta (*fl b*); V. cucullata (*fl v-b* or *p*) and var.; V. Munbyana (*fl v* or *y*) and var.; V. odorata (*fl b, v*, or *v-p, sc*) and vars.; V. pedata (*fl b* or *w*) and vars.; V. rothomagensis (*fl b*, striped *bk*); V. suavis (*fl b* and *w, sc*); V. tricolor (*fl* variable) and vars.

STOVE.—Success in the cultivation of a large proportion of the most beautiful plants can only be secured in a house where a high temperature and a moist atmosphere are constantly maintained. The following lists comprise the choicest Stove plants. The average temperatures of a Stove should range as follows: Winter, day, 60deg. to 70deg.; night 60deg. Summer, day, 70deg. to 85deg.; night, 65deg.

ANNUALS.—Citrullus vulgaris (*fr*); Coccocypselum repens (*fl b*); Desmodium gyrans (*fl v*; *fol g*); Euryale ferox (*aq, fl v*); Ipomœa Bona-nox (*fl w*); I. rubro-cærulea (*fl b*); Mimosa pudica (*fl r*); Physidium cornigerum (*fl p*); Sonerila stricta (*fl pi-p*); Torenia asiatica (*fl b* and *v*); T. flava (*fl y, p* eye); T. Fournieri (*fl v, y*, and *l*); Trichosanthes palmata (*fl* and *fr*); Victoria regia (*aq, fl w*, and *p* or *pi*; *fol g*).

BIENNIAL.—Cleome rosea (*fl pi*).

PERENNIALS.—Æchmea calyculata (*fl y* and *r*); Æ. cœlestis (*fl b*); Æ. cœrulescens (*fl b*; *fr b* and *w*); Æ. discolor (*fl r*; *fol g* and *p*); Æ. distichantha (*fl pi, p*, and *r*); Æ. fasciata (*fl pi*; *fol g*, banded *w*); Æ. fulgens (*fl r*, tipped *b*); Æ. glomerata (*fl v* and *r*); Æ. hystrix (*fl r*); Æ. Mariæ-Reginæ (*fl b* and *pi*); Æ. spectabilis (*fl pi* and *r*); Æ. Veitchii (*fl r*); Agalmyla staminea (*fl r*); Aglaonema commutatum (*fl w*; *fol g*, blotched *gy*); A. Mannii (*fl w* and *r*; *fol g*); A. pictum (*fl c-y* and *w*; *fol g*, blotched *gy*); Alpinia albo-lineata (*fol g*, banded *w*); A. nutans (*fl pi, sc*; *fol*); A. vittata (*fol* striped *g* and *w*); Amomum angustifolium (*fl y*); A. Cardamomum (*fl br*); A. Granum Paradisi (*fl w*, tinged *y* and *pi*); Amorphophallus Titanum (*fl p* and *g*; *fol g*); Ananas macrodonta (*fr sc*); A. Porteana (*fol g*, banded *y*); A. sativa (*fr r-y*); A. s. variegata (*fol g, c-y*, and *r*); Anchomanes Hookeri (*fl p* and *w*; *fol g*); Angelonia salicariæfolia (*fl b*); Anthurium acaule (*fl b, sc*; *fol g*); A. Andreanum (*fl y* and *o-r*; *fol g*); A. Bakeri (*fl g, pi*, and *r*; *fol g*); A. crystallinum (*fol g* and *w*); A. ferrierense (*fl r* and *w*; *fol g*); A. Harrisii pulchrum (*fl c-w* and *r*; *fol g* and *w*); A. insigne (*fol* bronzy *g*); A. Kalbreyeri (*fol g*); A. Lindenianum (*fl w* and *p, sc*; *fol g*); A. macrolobum (*fol g*); A. ornatum (*fl w* and *p*; *fol g*); A. regale (*fol g*, veined *w*); A. Scherzerianum (*fl r* and *o*; *fol g*) and vars.; A. splendidum (*fol g* and *g-y*); A. subsignatum (*fol g*); A. Veitchii (*fol g*); A. Waluiewi (*fol g* or *r*); A. Waroqueanum (*fol g*); Begonia albo-coccinea (*fl pi* and *w*); B. gogoensis (*fl pi*; *fol* bronzy, *r* beneath); B. heracleifolia (*fl pi*; *fol g*) and vars.; B. manicata (*fl pi*; *fol g*); B. prismatocarpa (*fl o* and *y*; *fol g*); B. Rex (*fol*) and vars.; B. socotrana (*fl pi*; *fol g*);

Stove (Perennials)—*continued.*

B. Thwaitesii (*fol g, r-p, w*, and *r*); Bertolonia maculata (*fl v-p*; *fol g*); B. marmorata (*fol g* and *w, p* beneath); B. pubescens (*fol g* and *br*); Billbergia Baraquiniana (*fl g*; *fol g* and *w*); B. iridifolia (*fl r* and *y*, tipped *b*); B. Liboniana (*fl r, w*, and *p*); B. marmorata (*fl b* and *r*; *fol g* and *r-br*); B. Moreli (*fl r* and *p-v*); B. pyramidalis (*fl r*, bracts *pi*); B. Quesneliana (*fl p* and *pi*; *fol g*); B. rosea-marginata (*fl b* and *pi*; *fol g*); B. Saundersii (*fl r, y*, and *b*; *fol g, w*, and *p*); B. thyrsoidea (*fl*); B. zebrina (*fl g* and *pi*; *fol g*, zoned *gy*); Brachyspatha variabilis (*fl g-p, w*, and *r*; *fol g*); Bromelia bicolor (*fl r*; *fol g* and *r*); B. bracteata (*fl pi* and *r*); B. Fernandæ (*fl y* and *o-r*); Burbidgea nitida (*fl o-r*); Caladium argyrites (*fol g*, &c.); C. Chantinii (*fol r, w*, and *g*); C. Devosianum (*fol g*, blotched *w* and *pi*); C. Kochii (*fol g*, spotted *w*); C. Lemaireanum (*fol g*, veined *w*); C. Leopoldi (*fol g, r*, and *pi*); C. macrophyllum (*fol g*, blotched *g-w*); C. maculatum (*fol g*, spotted *w*); C. marmoratum (*fol g*, and *gy* or *si*); C. rubrovenium (*fol g-gy*, veined *r*); C. sanguinolentum (*fol g, w*, and *r*); C. Schomburgkii (*fol g*, veined *w*); C. Verschaffeltii (*fol g*, spotted *r*); C. varieties (*fol*); Calathea arrecta (*fol g, r* beneath); C. Baraquinii (*fol g*, banded *si-w*); C. bella (*fol g* and *gy-g*); C. fasciata (*fol g, w*, and *p*); C. illustris (*fol g* and *pi*); C. Kerchoviana (*fol gy g* blotched *p*); C. leopardina (*fol y-g*, blotched *g*); C. Lindeni (*fol g, p-pi* beneath); C. Makoyana (*fol g, c-y*, and *w*); C. Massangeana (*fol g, si, r*); C. micans (*fol g*, striped *w*); C. nitens (*fol g*); C. ornata (*fol y-g, p* beneath) and vars.; C. pardina (*fl g*; *fol g*, blotched *br*); C. princeps (*fol g* and *y-g, p* beneath); C. tubispatha (*fol g-y*, blotched *br*); C. Vanden Heckei (*fol g* and *si, p-r* beneath); C. Veitchii (*fol g*, blotched *y, p* beneath); C. Wallisii (*fol g*); C. Warscewiczii (*fol g*, striped *y-g*); C. zebrina (*fol g*, barred *g-p, g-p* beneath); Canistrum aurantiacum (*fl o-y*); C. eburneum (*fl w* and *g*; *fol c* and *g*); Canna iridiflora (*fl pi, y* spot); Caraguata Van Volxemii (*fl y*); C. Zahnii (*fl y*; *fol y*, striped *r*); Carludovica atrovirens (*fol g*); C. palmata (*fol g*); C. rotundifolia (*fol g*); Centropogon Lucyanus (*fl pi-r*); Centrosolenia bullata (*fl y-w*; *fol* bronzy *g, r* beneath); C. picta (*fl w*); Ceropegia elegans (*fl p*); C. Thwaitesii (*fl y*, spotted *r*); Chirita lilacina (*fl b* and *w*, blotched *y*); C. Moonii (*fl p*); Cochliostema Jacobinianum (*fl b, sc*); C. odoratissimum (*fl y-g, r, b*, and *w, sc*); Colocasia antiquorum (*fl g*; *fol g*); C. indica (*fl br*; *fol g*); C. odorata (*fl w, sc*; *fol g*); Columnea Schiedeana (*fl y* and *br*); Cordyline albo-rosea (*fol g*, edged *pi*); C. amboynensis (*fol g, r*, and *p*); C. Baptistii (*fol g, y*, and *pi*); C. gloriosa (*fol g* and *o*); C. Guilfoylei (*fol r, pi, w*, and *g*); C. imperialis (*fol g*, rayed *r* or *pi*); C. magnifica (*fol pi*); C. ornata (*fol g*, margined *pi*); C. Robinsoniana (*fol g* and *br-r*); C. terminalis (*fol g* or bronze, and *r*); Corynophallus Afzelii (*fl w* and *p*; *fol g*) and vars.; Costus igneus (*fl c-r*, C. Malortieanus (*fl y*, banded *c-r*); Crinum amabile (*fl r, sc*); C. Balfourii (*fl w*, tube *g*); C. cruentum (*fl r*); C. giganteum (*fl w, sc*); C. Kirkii (*fl w*, striped *r*); C. purpurascens (*fl, r-p*); C. zeylanicum (*fl g* or tinted *sc*); Cryptocoryne ciliata (*fl g* and *p, sc*); Curculigo recurvata (*fl y*; *fol g*); C. r. striata (*fol g*, banded *w*); C. r. variegata (*fol g*, variegated *w*); Curcuma albiflora (*fl w* and *y*); C. australasica (*fl y*, bracts *pi*); C. cordata (*fl c-y*); C. petiolata (*fl y*, bracts *pi-p*); C. Roxburgiana (*fl r*, bracts *o*); C. rubricaulis (*fl r*); Cyanophyllum magnificum (*fol g* and *w, r-p* beneath); Cyanotis kewensis (*fl pi*); Dichæchampia Roëzliana (*fl* bracts *pi, sc*); Dendrobium Skinneri albo-nitens (*fl p*; *fol g*, lined *w*); Dichorisandra leucophthalmus (*fl b-p*); D. musaica (*fl b*; *fol g* and *w, r-p* beneath); D. thyrsiflora (*fl b*); Dichrotrichum tomentosum (*fl r*); Didymocarpus primulæfolia (*fl b*); Dieffenbachia amœna (*fol g*, blotched *w* and *g*); D. Baraquiniana (*fol g* and *w*); D. Bausei (*fol g* and *y g*, spotted *w*); D. brasiliensis (*fol g*, blotched *w*); D. chelsoni (*fol g, gy*, and *y g*); D. eburnea (*fol g*, spotted *w*); D. latimaculata (*fol g, y-g*,

Stove (Perennials)—*continued.*

and *w*); D. Leopoldi (*fol g* and *w*); D. magnifica (*fol* variegated *g* and *w*); D. majestica (*fol g, y,* and *si*); D. nobilis (*fol g,* blotched *w*); D. princeps (*fol g, y,* and *si-gy*); D. Regina (*fol g-w* and *g*); D. Rex (*fol g,* blotched *w*); D. Wallisii (*fol* variegated *g* and *gy*); Dioscorea bulbifera (*fol g*); D. multicolor (*fol* variegated) and vars.; Dorstenia argentata (*fol g,* banded *si*); D. Mannii (*fol g*); Dracontium asperum (*fl p-br; fol g, p,* and *w*); Eichhornia azurea (*aq, fl b; fol-g*); E. crassipes (*aq, fol g*); Epipremnum mirabile (*fol g*); Episcia bicolor (*fl w* and *p*); E. chontalensis (*fl l, y,* and *w*); E. fulgida (*fl r*); E. villosa (*fl w,* marked *p*); Eucharis candida (*fl w*); E. grandiflora (*fl w*); E. Sanderiana (*fl w*); Eulophia macrostachya (*fl,* lip *y,* striped *r-p*); Eurycles amboinensis (*fl w*); Fittonia gigantea (*fl r; fol g,* veined *r*); T. Verschaffelti (*fol g,* veined *r*) and vars.; Gesnera Cooperi (*fl r,* throat spotted); G. discolor (*fl r*); G. Donkelaariana (*fl r; fol g,* tinged *p* and *r*); G. exoniensis (*fl o-r,* throat *y*); G. nægelioides (*fl pi, r,* and *y*); G. pyramidalis (*fl o-r* and *o,* spotted); G. varieties (*fl*); Globba atrosanguinea (*fl y* and *r*); G. Schomburgkii (*fl o-r*); Gloriosa superba (*fl o* and *r*) and var.; Gloxinia diversifolia (*fl*); G. gesneroides (*fl r*); G. glabra (*fl, w* and *y,* spotted *p*); G. maculata (*fl p b*); G. pallidiflora (*fl b*); G. varieties (*fl*); Gravesia guttata (*fol g,* dotted *pi*) and vars.; Guzmannia erythrolepis (*fl w* and *p-r*); G. tricolor (*fl w, y-g, r,* and *bk*); Gymnostachyum ceylanicum (*fl w,* tipped *g* and *y; fol g* and *w*); G. vennsta (*fl p*); Hæmanthus abyssinicus (*fl r*); H. cinnabarinus (*fl r*); H. Kalbreyeri (*fl r*); H. Katherinæ (*fl r*); H. puniceus (*fl o-r,* stamens *y* or *o*); Hedychium angustifolium (*fl r*); H. coronarium (*fl w, sc*); H. flavosum (*fl y, sc*); Heliconia aureo-striata (*fol g,* lined *y*); H. Bihai (*fol*); H. psittacorum (*fol*); H. triumphans (*fol g,* striped *bk*); Homalomena Roëzlii (*fl br* and *c; fol g,* blotched *y*); H. Wallisii (*fl r; fol g,* edged *w,* blotched *y*); Hymenocallis amœna (*fl w, sc*); H. macrostephanum (*fl w, sc*); H. speciosa (*fl w, sc*); Hypoestes sanguinolenta (*fl p* and *w; fol g,* banded *p*); Hypolytrum latifolium (*fl br*); Imantophyllum cyrtanthiflorum (*fl pi*); I. miniatum (*fl o* and buff); Impatiens Hookeriana (*fl w,* streaked *r*); I. Jerdoniæ (*fl y* and *r*); I. Sultani (*fl r*); I. Walkeri (*fl r*); Isoloma Ceciliæ (*fl pi*); I. hondense (*fl y, r*-hairy); Justicia marmorata (*fol g* and *w*); J. peruviana (*fl v*); J. ventricosa (*fl pi*); Kæmpferia Gilbertii (*fl g,* margined *w*); K. ornata (*fl y* and *o; fol g, p* beneath); Mantisia saltatoria (*fl y* and *p*); Maranta bicolor (*fol gl-g,* blotched *g, pi-p* beneath); M. concinna (*fl y; fol g*); M. Porteana (*fol g,* barred *w, p* beneath); M. sagoriana (*fl g*); Massangea hieroglyphica (*fol g,* banded *v-bk*); M. musaica (*fl w* and *br; fol y-g* and *g*); Momordica Charantia (*fl y*); Nægelia cinnabarina (*fl r*); N. fulgida (*fl r*); N. f. bicolor (*fl r* and *w*); N. Geroltiana (*fl o-r*); N. multiflora (*fl w* or *c*); N. zebrina (*fl o-r*); Nepenthes atrosanguinea (pitchers *r, y,* and *bk*); N. bicalcarata (pitchers); N. coccinea (pitchers *r,* speckled *y*); N. Courtii (pitchers *gy-g,* spotted *r*); N. Dormanniana (pitchers *g,* blotched *r*); N. Hookeriana (pitchers *r* or *g*); N. intermedia (pitchers *g,* spotted *r*); N. Khasiana (*fl g* and *y;* pitchers *g* and *p*); N. Lawrenciana (pitchers *g,* spotted *r*); N. madagascariensis (pitchers *r, c* throat); N. Mastersiana (pitchers *r, p,* and *pi-c*); N. Morganiæ (pitchers *r* and *g*); N. Northiana (pitchers *p* and *bk* spotted); N. Rafflesiana (*fl y* and *br;* pitchers *g-y* and *br*); N. Rajah (pitchers *p*); N. Ratcliffiana (pitchers *g,* spotted *r*); N. rubro-maculata (pitchers *y-g,* spotted *r*); N. sanguinea (pitchers *r*); N. Sedeni (pitchers *g,* freckled *br-r*); N. Veitchii (pitchers); N. Williamsii (pitchers *g,* spotted *r*); Nymphæa Devoniensis (*aq, fl pi-r*); N. Lotus (*aq, fl r* or *w*) and var.; N. stellata (*aq, fl b, sc*) and vars.; N. Sturtevantii (*aq, fl pi*); N. thermalis (*aq, fl w, sc*); Orthosiphon stamineus (*fl l-b*); Ouvirandra fenestralis (*aq, fl g-w; fol g*); Papyrus antiquorum (*aq,* stems and *fol g*);

Stove (Perennials)—*continued.*

Peperomia clusiæfolia (*fol g,* margined *r*); P. maculosa (*fol g*); P. marmorata (*fol* variegated *g* and *w*); P. nummulariæfolia (*fol g*); P. Saundersii (*fol g* and *w*); Peristrophe speciosa (*fl p* and *r-p*); Philodendron grandifolium (*fl* buff, *g, pi,* &c.; *fol g*); P. Mamei (*fl* variegated *g* and *w*); P. Selloum (*fl g* and *w; fol g*); P. Simsii (*fl r*); Phinæa albo-lineata (*fl w*); P. rubida (*fl r*); Pilea microphylla (*fol g*); Pistia Stratiotes (*aq, fol g*); Pitcairnia Andreana (*fl y* and *r*); P. corallina (*fl r,* edged *w*); P. fulgens (*fl r*); P. Karwinskiana (*fl r*); P. muscosa (*fl r*); P. pungens (*fl r*); P. tabulæformis (*fl r*); P. xanthocalyx (*fl y*); P. zeifolia (*fl w* and *r-y*); Plagiolirion Horsmanni (*fl w*); Plumbago rosea (*fl r-pi*); Portea kermesina (*fl b* and *pi*); Pothos celatocaulis (*fol g*); Rhœo discolor (*fl b* or *p; fol g,* or *p* beneath); Ronnbergia Morreniana (*fl b; fol g*); Ruellia Portellæ (*fl pi; fol g, r-p* beneath); R. spectabilis (*fl p-b*); Saccharum ægyptiacum (*fl si; fol gy-g*); Sanchezia longiflora (*fl r-p*); S. nobilis (*fl y* and *r*); S. n. glaucophylla (*fol gl-g,* striped *w* or *y*); Schismatoglottis crispata (*fl g* and *c-w; fol g,* banded *gy*); S. Lavallei purpurea (*fol g* and *gy, r-p* beneath); S. pulchra (*fol gl-g,* spotted *si-g*); S. variegata (*fl gl-g* and *y-g; fol g,* banded *si*); Scutellaria costaricana (*fl p, y-r,* and *y*); S. Lehmanni (*fl r*); S. splendens (*fl r*); Sinningia barbata (*fl w,* marked *r; fol g, r* beneath); S. concinna (*fl p* and *y; fol g,* nerved *r*) and var.; S. conspicua (*fl y,* marked *p*); S. speciosa (*fl v,* &c.; *fol g,* &c.) and vars.; S. Youngiana (*fl v* or *p,* and *y-w; fol g, g-w* below); Siphocampylos betulæfolius (*fl r*); S. glandulosus (*fl pi*); S. Humboldtianus (*fl r*); S. longepedunculatus (*fl p*); Spathiphyllum candidum (*fl w*); S. cannæfolium (*fl w*); S. pictum (*fol g* and *y-g*); Spigelia splendens (*fl r*); Tacca integrifolia (*fl g,* variegated *p* and *y; fol g*); T. pinnatifida (*fl p; fol g*); Thunbergia coccinea (*fl r,* varying to *o-pi*); T. erecta (*fl b, o,* and *y*); T. fragrans (*fl w, sc*); T. laurifolia (*fl b*); Tillandsia carinata (*fl y, r,* and *g*); T. corallina (*fl g* and *p-r*); T. glaucophylla (*fl g-w, p, r,* and *y*); T. Hamaleana (*fl g, w, v,* and *p*); T. ionantha (*fl v*); T. Lindeni (*fl g, r,* and *b-p*); T. Morreni (*fl br* and *y-g*); T. psittacina (*fl g, r,* and *y*); T. pulchra (*fl g-w, w,* and *r*); T. regina (*fl w* and *pi, sc*); T. Saundersii (*fl g-y*); T. splendens (*fl y* and *p; fol g,* zoned *br* beneath); T. umbellata (*fl b, w,* and *g*); T. virginalis (*fl w* and *g*); T. xiphioides (*fl w*); T. xiphostachys (*fl p, g, y,* and *r*); Turnera ulmifolia (*fl y*); Tydæa amabilis (*fl pi,* dotted *p*); Typhonium divaricatum (*fl p*); Utricularia montana (*fl w* and *y*); Xanthosoma Barilleti (*fol g*); X. Lindeni (*fol g,* veined *w*); X. violaceum (*fl v* and *w; fol g*).

TRAILING.—Lists of the best Herbaceous Creepers and Trailers are here given. Many of them will be found useful for growing in baskets; and amongst the hardy kinds, plants for covering exposed parts of the rockery may be readily selected. Those Creepers and Trailers which are of a shrubby nature are classified under the heading **Shrubs.**

Hardy.—ANNUALS.—Blumenbachia insignis (*fl w* and *r-y*); Lagenaria vulgaris (*fl w; fr y*); Limnanthes Douglasii (*fl y,* changing to *w* and *g*); Loasa prostrata (*fl y*); Mesembryanthemum crystallinum (*fl w; fol*); Nolana paradoxa (*fl*); Nonnea rosea (*fl pi* and *y-w*); Silene pendula (*fl pi-w*); Wahlenbergia hederacea (*fl b*).

PERENNIALS.—Ajuga reptans (*fl b,* varying to *pi*); Anagallis tenella (*fl pi*); Androsace lanuginosa (*fl pi*); Arabis albida (*fl w*); A. arenosa (*fl pi, w,* or *b*); A. lucida (*fl w*); A. l. variegata (*fol* edged *y*); A. petræa (*fl w*); A. rosea (*fl pi-p*); Arenaria balearica (*fl w*); A. purpurascens (*fl p*); Astragalus austriacus (*fl b* and *p*); A. glycyphyllos (*fl g-y*); A. hypoglottis (*fl p, b,* and *w*); Centaurea dealbata (*fl pi*); Claytonia sibirica (*fl pi*); Convolvulus cantabricus (*fl r*); Coronilla iberica (*fl y*); Leptinella dioica (*fl y*); Linaria Cymbalaria (*fl b* or *l*);

Trailing (Hardy Perennials)—*continued.*

Lysimachia Nummularia (*fl y*; *fol g*); Mimulus moschatus (*fl y*); Mitchella repens (*fl w* and *p*); Nertera depressa (*fr o* or *r*); Nierembergia rivularis (*fl w* and *y*); Omphalodes verna (*fl b* and *w*); Ourisia coccinea (*fl r*); Oxalis corniculata (*fl y*); O. c. rubra (*fol p*); O. enneaphylla (*fl w* or *pi*, veined *p*); Phlox reptans (*fl p* or *v*); Potentilla ambigua (*fl y*); Pratia angulata (*fl w*); P. repens (*fl w*, tinted *v*); Pyxidanthera barbulata (*fl w* or *pi*); Saponaria ocymoides (*fl r* or *pi*); Saxifraga oppositifolia (*fl p*); Scutellaria orientalis (*fl y*, or *y* and *p*); Sedum album (*fl w*; *fol g*); S. anglicum (*fl w* or *pi*; *fol g*); S. reflexum (*fl y*); Tiarella cordifolia (*fl w*); Trifolium uniflorum (*fl b* and *p*); Tropæolum polyphyllum (*fl y*); Vinca herbacea (*fl p-b*; *fol g*); V. major (*fl b-p*; *fol g*); V. m. elegantissima (*fol g*, marked *w*); V. media (*fl b*); V. minor (*fl v-p*, *w*, or *b*; *fol g*); Waldsteinia fragarioides (*fl y*).

Half-hardy.—Annuals.—Abronia umbellata (*fl pi*; *sc*); Calandrinia Menziesii (*fl p-r*).

Biennial.—Calandrinia umbellata (*fl r*).

Perennials.—Abronia arenaria (*fl y*, *sc*); Boussingaultia baselloides (*fl w*, changing to *bk*); Nierembergia calycina (*fl y* and *w*); Saxifraga sarmentosa (*fl w*, dotted *y* and *r*; *fol r* beneath).

Trailing (Half-hardy Perennials)—*continued.*

Tender.—Annual.—Ipomœa filicaulis (*i-h*, *fl w* or *c*, and *p*).

Perennials.—Aneilema biflora (*c-h*, *fl b*); Arabis blepharophylla (*c-h*, *fl pi-p*); Batatas edulis (*i-h*, *fl w* and *p*); Begonia amabilis (*i-h*, *fl pi* or *w*; *fol g* or variegated); B. hydrocotylifolia (*i-h*, *fl pi*); B. prismatocarpa (*st*, *fl o* and *y*; *fol g*); Convolvulus mauritanicus (*c-h*, *fl b*, throat *w*, anthers *y*); Cyanotis kewensis (*st*, *fl pi*); Episcia bicolor (*st*, *fl w*, bordered *p*); Fragaria indica (*c-h*, *fl y*; *fr r*); Gazania splendens (*c-h*, *fl o*, marked *bk* and *w*); Kennedya prostrata (*c-h*, *fl r*); Œnothera acaulis (*c-h*, *fl w*, fading to *r*); Œ. taraxacifolia (*c-h*, *fl w*, fading to *r*); Oleandra nodosa (*st*, *fol g*); Pelargonium peltatum (*c-h*, *fl* varying from *w* to *r*); Pellionia Daveauana (*i-h*, *fl g*; *fol g*, tinted *v*); P. pulchra (*i-h*, *fol g*, *bk*, and *p*); Peperomia nummulariæfolia (*st*, *fol g*); Selaginella albonitens (*c-h*, *fol g*); S. apus (*c-h*, *fol g*); S. denticulata (*c-h*, *fol g*, turning *r*); S. Kraussiana (*c-h*, *fol g*); S. Martensii (*c-h*, *fol g*); S. uncinata (*c-h*, *fol g*); Stenotaphrum americanum variegatum (*st*, *fol g*, striped *w*).

COLOURS OF FLOWERS OF HERBACEOUS PLANTS.

AN attempt is here made to classify, under definite headings, according to the colours of their flowers, the most desirable of the herbaceous plants described in this work, with a view to facilitating the selection of plants when blossoms of certain hues are required for any special purpose. Many good, and in some cases popular, subjects are perforce omitted owing to the profusion of tints exhibited by individual flowers (a large number of the Orchids might be cited as examples); but wherever possible, plants whose flowers are not self-coloured are classed under the heading to which their *prevailing* colour most nearly approximates, and their markings briefly indicated.

Where a plant bears flowers in two or more distinct varieties or strains of colour, its name will be found under each—*e.g.*, *Delphinium Ajacis* is classed under Blue, Red, and White. It has not been thought necessary to make provision for the few green-flowered subjects—mostly Orchids—in cultivation, as it is unlikely that such a list would be sought by any reader.

The height of each plant is given in feet and fractions of a foot.

The following abbreviations are employed throughout this section of the Supplement:—

aq, aquatic; *b*, blue; ***bk*, black**; ***br*, brown**; ***c*, cream**; ***c-h*, cool house**; ***g*, green**; ***gl*, glaucous**; ***gy*, grey**; ***i-h*, intermediate house**; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *s-aq*, semi-aquatic; *sc*, scented; *si*, silvery; *st*, stove; *v*, violet; *w*, white; *y*, yellow.

Others have, however, been deemed necessary, in order to more clearly indicate the exact shades or tints—*e.g.*, under Pink there are *d* (dark), *fl* (flesh), *pa* (pale), *ro* (rose), and *sa* (salmon)—but, to avoid confusion, the additional abbreviations are confined to the section to which they refer.

BLUE.—The shades are indicated by the following abbreviations: *am* (amethystine), *d* (dark), *pa* (pale), *sk* (sky).

Hardy.—ANNUALS—**Anagallis grandiflora** (varying to *r*; ¼); Asperula orientalis (*sk*; 1); Borago longifolia (1); B. officinalis (*b*, *p*, or *w*; 1-2); Centaurea Cyanus (variable; 2-3); **Delphinium Ajacis** (*b*, *r*, or *w*; 1-1½); **Gilia achilleæfolia** (*p-b*; 1); **G. capitata** (1-2); **Moricandia sonchifolia** (*pa v-b*; 1-2); **Nemophila insignis** (*sk*; 1½); **N. Menziesii**

Blue (Hardy)—*continued.*

vars. (*pa*; ¼); Nicandra physaloides (2); Nigella damascena (*b* or *w*; 1-2); **N. hispanica** (*d*; 1-2); Nolana tenella (*pa*); Phacelia campanularia (*d*, spotted *w*; ½-¾); P. viscida (*p-b*; 1); P. Whitlavia (2); Sedum cæruleum (¼); Wahlenbergia hederacea (*pa*).

BIENNIALS.—Anarrhinum bellidifolium (*pa*, or *w*; 2); Myosotis sylvatica (throat *y*; 1-2).

PERENNIALS.—Aconitum angustifolium (*d*; 2-3);

Blue (Hardy Perennials)—*continued.*

A. biflorum (*pa*; ½); A. chinense (*d*; 4-6); A. eminens (2-4); A. gracile (*pa*, or *v*; 2); A. Napellus (3-4); A. Ottonianum (variegated *w*; 2-4); A. tauricum (*d*; 3-4); A. variegatum (1-6); A. vulparia septentrionale (4); Actæa spicata (*pa*, or *w*; 1) and var.; Adenophora coronopifolia (1-2); A. denticulata (1½); A. Fischeri (1½); A. Lamarckii (1-2); A. pereskiæfolia (1½); A. stylosa (*pa*; 1-1½); A. verticillata (*pa*; 2-3); Ajuga orientalis (1-1½); A. pyramidalis (*b* or *p*; ½); Allium azureum (*sk*; 1-2); A. cœruleum (¾); Amphicome salicifolia (*pa*; 1½-2½); A. Tabernæmontana (*pa*; 1½-2½); Anemone angulosa (*sk*; ¾-1); A. apennina (½); A. blanda (*d*; ½); A. Hepatica vars. (½); A. nemorosa cœrulea (½); A. n. Robinsoniana (*sk*; ½); Aphyllanthus monspeliensis (1); Aster æstivus (2); A. elegans (2); A. lævis (2); A. novæ-belgii (*pa*; 4); A. paniculatus (*pa*; 4); A. spectabilis (2); Astragalus arenarius (½); A. austriacus (*b* and *p*; ¼); Baptisia australis (2); B. exaltata (*d*; 3-4); Borago laxiflora (*pa*); Brodiæa capitata (*v-b*; 1-2); B. congesta (1); Calophanes oblongifolia (1); Camassia esculenta (*d*, varying to *w*; 1½); C. Fraseri (*pa*; 1); Campanula Allionii (rarely *w*; ¼); C. alpina (*d*; ¼-¾); C. barbata (*pa*; ½-1½); C. betonicæfolia (*p-b*; 1½); C. cæspitosa (*d*; ¼-½); C. carpathica (¾); C. cenisia (*d*; ¼); C. collina (*d*; 1); C. garganica (¼-½); C. grandis (*pa v-b*; 1-2); C. isophylla (*l-b*); C. lactiflora (*b* or *c*; 2-6); C. latifolia macrantha (*p-b*; 1-2); C. nitida (*b* or *w*; ¼-¾); C. persicæfolia cærulea coronata (1-3); C. primulæfolia vars. (1-3); C. pulla (*v-b*; ¼-½); C. pusilla (*d*, varying to *w*; ¼-½); C. pyramidalis vars. (4-5); C. Rapunculus (*b* or *w*; 2-3); C. rotundifolia (*d*; ½-1); C. r. Hostii (½-1); C. r. soldanellæflora (1); C. sarmatica (*pa*; 1-2); C. Scheuchzeri (*d*; ¼-½); C. speciosa (*b*, *w*, or *p*; 1-1½); C. Tommasiniana (*pa*; ¾-1); C. Trachelium vars. (2-3); C. Van Houttei (*d*; 2); C. Waldsteiniana (*v-b*; ¼-½); C. Zoysii (*pa*; ¼); Centaurea montana (2); Chionodoxa Luciliæ (*d*, *w* centre; ½); Clematis aromatica (*v-b*; 4-6); Commelina virginica; Delphinium cashmirianum (*pa*; 1-1½); D. dasycarpum (petals *br*; 4-6); D. exaltatum (*b* or *w*; 3-6); D. formosum (1½-3); D. grandiflorum (varying to *w*; 1-2); Dracocephalum altaiense (½-¾); D. austriacum (1½); D. peregrinum (¼); D. speciosum (*pi-b*; 1½); Eryngium alpinum (1½-2); E. amethystinum (*am*; 1-2); E. Bourgati (1-2); E. giganteum (3-4); Fritillaria persica (*v-b*; 3); F. tulipifolia (1); Galega officinalis (3-4); G. orientalis (2-4); Gentiana acaulis (marked *y*; ¼); G. affinis (¼-1); G. Andrewsii (1-2); G. asclepiadea (½-1½); G. bavarica (*d*; ¼); G. cruciata (*pa*, throat dotted *g*; ½); G. Kurroo (*sk*, sprinkled *w*); G. ornata (*d*, tube striped *w*; ½); G. Pneumonanthe (*d*; ½-1); G. pyrenaica (*d*, *pa g* outside; ¼); G. septemfida (*sk*; ½-1½); G. verna (*sk*; ½); Geranium ibericum (1); G. pratense (2-3); G. sylvaticum (*b* or *p*, veined *r*); ¾); Globularia nudicaulis (½); G. vulgaris (½-1); Glycyrrhiza glabra (3-4); Houstonia cærulea (*pa*; ¼); Hyacinthus amethystinus (¼-1); H. varieties (*sc*; ¾-1); Iris sibiricus (*l-b* and *v*; 1-2½); Lactuca alpina (*p-b*; 3); L. tuberosa (*pa*; 1-1½); Linaria Cymbalaria (*b* or *l*); Linum alpinum (½); L. narbonense (2); Lithospermum Gastoni (*sk*, 1-1½); L. purpureo-cæruleum (*r* at first; 1); Lobelia syphilitica (*pa*; 1-2); Lophanthus anisatus (3); Lupinus lepidus (*p-b*, *w* spot; ½); L. nootkatensis (mixed *p*, *w*, or *y*; 1-1½); L. perennis (2); L. polyphyllus (usually *d*; 4); L. subcarnosus (*d*; 1); Mandragora vernalis (*b* or *w*; 1); Mertensia alpina (*pa*; ½-¾); M. lanceolata (½-1); M. sibirica (*p-b*, &c.; ½-1½); M. virginica (*p-b*; 1-2); Muscari botryoides (*d sk*; ½-1); M. b. pallidum (*pa* ½-1); M. Elwesii (¼); M. Heldreichii (¾); M. neglectum (*d*, *sc*; ¾-1); M. paradoxum (*b-bk*; ½-¾); M. racemosum (*d*, changing to *r-p*, *sc*; ¼-¾); M. Szovitsianum (*sc*; ½); Myosotis alpestris (*y* eye, *sc*; ¼); M. dissitiflora (*d sk*; ½-1); M. palustris (*s-aq*, throat *y*; ½-1); M. sylvatica (throat *y*; 1-2); Omphalodes Luciliæ (*l-b*; ¼-½); O. verna (throat *w*; ½); Oxytropis montana (calyx *p*; ½); O. pyrenaica (*sk*; ¼-½); Pentstemon azureus (*sk*; 1); P. glaber (*b*, *p*, or *v*, ½-1); P. varieties; Phlox divaricata (*b* or *pa l*; ¾-1¼); Phyteuma comosum (*b* or *p*, ¼-½); P. humile (*b*; ¼); Pinguicula grandiflora (*s-aq*, *v-b*); Platycodon grandiflorum (½-1); Polemonium cæruleum (2); P. confertum (½); P. humile (*b* or *p*; ½); P. reptans (*b* or *w*; ½); Primula capitata (*v-b*); P. sapphirina (*pa*; ½); Pulmonaria angustifolia (at first *pi*; 1); Salvia hians (2); Scabiosa caucasica (*pa*; 1); Scilla amœna (*b* or *w*; ½-¾); S. bifolia (*b*, *r*, or *w*; ½); S. hispanica (often turning *pi-p* or *w*); ¾-1); S. h. aperta (*pa*; ¾-1); S. nutans vars.; S. pratensis; S. sibirica (*d*; ¼-½); Statice elata (2); S. floribunda (*v-b*); S. latifolia (1); Symphytum caucasicum (3); Veronica incana (2); V. spicata (½-1½); V. virginica (*b* or *w*; 2-6); Vinca media; V. minor vars.; Viola cornuta (*pa*); V. odorata vars. (*sc*); V. pedata (*b* or *w*); V. rothomagensis (striped *bk*); V. tricolor vars.; Wahlenbergia Kitaibelii (tinged *p*; ½); W. tenuifolia (*v-b*, *w* at base; ¼-½); Wulfenia carinthiaca (1-2).

Half-hardy.—ANNUALS.—Ageratum mexicanum (*l-b*; 2) and vars.; Brachycome iberidifolia (*b* or *w*; 1); Callistephus chinensis vars. (½-2); Downingia elegans (*w* streak; ½); D. pulchella (*y* eye; ½); Ipomœa hederacea (*pa*; 10); Swertia corymbosa (*pa*, or *w* and *b*; ¾-1½).

PERENNIALS.—Anagallis linifolia (½-1) and vars.; Bellis rotundifolia cærulescens (*pa*, or *w*); Calotis cuneifolia (1); Cœlestina ageratoides (1); Commelina cœlestis (1½); Dianella lævis (2); D. tasmanica (*pa*, 3-5); Herbertia cærulea (claws *w*; ½); Heteranthera limosa (*s-aq*, *v-b*); Myosotis azorica (*y* eye; ½-¾); Salvia patens (2½); Tritelein laxa (1-1½); Verbena venosa (*b* or *l*; 2); Viola hederacea (*b* or rarely *w*).

Tender.—ANNUALS.—Browallia demissa (*c-h*, *pa*; ½-1); B. elata (*c-h*, *d*; 1½); B. e. grandiflora (*c-h*, *pa*; 1½); Coccocypselum repens (*st*); Solanum Melongena (*c-h*; 2-8); S. sisymbriifolium (*c-h*, *pa*, or *w*; 4); Torenia asiatica (*st*, lateral lobes *d v*).

BIENNIALS.—Anchusa capensis (*c-h*; 1½); Blepharis capensis (*c-h*; 1); Echium candicans (*c-h*, 2-4).

PERENNIALS.—Æchmea cœlestis (*st*, *sk*); Aganisia cærulea (*st*); Agapanthus umbellatus (*c-h*; 2-3); A. u. flore-pleno (*c-h*); A. u. Leichtlinii (*c-h*, *da*); A. u. maximus (*c-h*); A. u. minor (*c-h*, *da*); A. u. Mooreanus (*c-h*, *da*); Agathæa cœlestis (*c-h*; 1½); Aneilema biflora (*c-h*; ½); Angelonia salicariæfolia (*st*; 1½-3); Anthurium acaule (*st*; 1-3); Babiana disticha (*c-h*, *pa*, *sc*; ½); B. plicata (*c-h*, *v-b*, *sc*; ½); Bæa hygrometrica (*c-h*, *pa*; ½); Billbergia marmorata (*st*, *d*, bracts *r*); B. rosea marginata (*st*, *pa*, bracts *pi*; 1½); Chirita lilacina (*st*, *pa*, tube *w*); Cineraria varieties (*c-h*); Convolvulus mauriticanus (*c-h*, throat *w*); Cyanella odoratissima orchidiformis (*c-h*, *sc*; 1); Dendrobium MacCarthiæ (*st*, cerise-*b*, lip veined *p*; 1½-2); Dichorisandra musaica (*st*, *sk*; 1½); D. thyrsiflora (*st*, *d*, anthers *y*; 4); Geissorhiza Rochensis (*c-h*, spotted *r*; ¾); Gentiana Fortunei (*c-h*, *d*, spotted *w*; ½); Gloxinia varieties (*st*); Griffinia hyacinthina (*i-h*, *w* at base; ¾); Hyacinthus varieties (*c-h*, *sc*, ¾-1); Lachenalia purpureo-cærulea (*c-h*, *p-b*; ½-¾); Lobelia Erinus (*c-h*, throat *w* or *y*; ½); Nymphæa gigantea (*c-h aq*, stamens *y*); N. scutifolia (*i-h aq*, *sc*); N. stellata (*st aq*, *sc*); N. s. zanzibarensis (*st aq*, *d*); Orthosiphon staminens (*st*, *pa l-b*; 2); Portea kermesina (*st*, bracts *pi*; 1½); Rhœo discolor (*st*, *b* or *p*); Ronnbergia Morreniana (*st*); Ruellia spectabilis (*st*, *p-b*, *d* veined; 2); Saccolabium cœleste (*st*); Salvia cacaliæfolia (*c-h*, *d*; 3); Solanum sisymbriifolium (*c-h*, *pa*, or *w*; 4); Stokesia cyanea (*c-h*, 1-1½); Streptocarpus Rexii (*i-h*; ½); S. Saundersii (*i-h*, *pa*; 1); Thunbergia erecta (*st*, *d*, *c* and *y* below; 6); T. laurifolia (*st*); Tillandsia umbellata (*st*, centre *w*; 1); Tropæolum azureum (*c-h*, *sk*); Vanda cærulea (*st*; 2-3); Wigandia Vigieri (*c-h*, *l-b*; 6).

BROWN.—The shades are indicated by the following abbreviations: *cho* (chocolate), *d* (dark), *pa* (pale).

Brown—*continued.*

Hardy.—PERENNIALS.—Aira flexuosa (1); Aplectrum hyemale (*g-br*; 1); Arisæma triphylla (*p-br* and *g*; ¾-1); Asarum canadense (1); Cheiranthus Cheiri vars. (*sc*; 1-2); Dracunculus vulgaris (3); Fritillaria græca (½); Geranium phæum (*bk-br*, spotted *w*); Helicodiceros crinitus (*p-br*; 1-1½); Iris fulva (2-3); Primula Auricula vars. (½); P. officinalis vars. (¼-1).

Half-Hardy.—PERENNIALS.—Calceolaria varieties (1); Eucomis nana (¾); Ferraria Ferrariola (*g-br*; ½).

Tender.—PERENNIALS.—Amomum Cardamomum (*st*; 8); Bulbophyllum barbigerum (*st*, *g-br*; ½); Cattleya guttata Leopoldii (*st*, *d*, spotted *r*, lip *r-p*; 1½-2); Colocasia indica (*st*; 5); Cymbidium Devonianum (*st*, *pa*, marked *mv-p*, lip *p* and *w*; 1½); C. giganteum (*st*, lip marked *y* and *p*; 2½); C. Huttoni (*st*, *cho* and *w*); Dracontium asperum (*st*, *p-br*; 5-6); Houlletia picta (*st*, column *y*); Hypolytrum latifolium (*st*; 2-4); Masdevallia ephippium (*c-h*, *p-br*, marked *y*, *y* tails); Odontoglossum tripudians (*c-h*, marked *y-g*); Oncidium annulare (*i-h*, marked *y*); O. bicallosum (*st*, *d*, lip *y*); O. cucullatum (*c-h*, *p-br*); Vanda insignis (*st*, lip *w* and *p-pi*); Zygopetalum Clayi (*i-h*, *p-br*, lip *p*).

LAVENDER, LILAC, AND MAUVE.—The shades are indicated by the following abbreviations: *d* (dark); *la* (lavender); *pa* (pale).

Hardy.—ANNUALS.—Gilia androsacea (*l*, *pi*, or nearly *w*; ¾-1); G. densiflora (*l* or nearly *w*; ¾); Ionopsidium acaule (*l*, or *w* tinged *v*; ¼); Lunaria annua (*v-l*; 1½-3); Lupinus nanus (*l* and *b*; 1); Malcolmia maritima vars. (½-1); Papaver somniferum vars. (3-4); Statice Suworowi (*l*).

BIENNIALS.—Aquilegia glandulosa (*l-b*, petals *w*; ¾-6); Aster Bigelovii (*l*, disk *y*; 2½); Lunaria annua (*v-l*; 1½-3).

PERENNIALS.—Aconitum uncinatum (*l*; 4-8); Æthionema coridifolium (*pi-l*; ½); Anemonopsis macrophylla (*l* and *p*; 2-3); Aquilegia olympica (*mv-b*, petals *w*; 1½); A. pyrenaica (*l-b*; ¾-1); A. sibirica (*l*; 1); Armeria vulgaris (*l*, variable; ½-1); Asclepias Douglasii (*p-l*, *sc*; 2-3); Aster pyrenæus (*l-b*, disk *y*; 1-1½); Campanula carpathica pelviformis (*l*, *sc*; ¾-1½); C. c. turbinata Hendersoni (*mv*; 1); Chrysanthemum varieties; Convolvulus althæoides (*l* or *pa r*); Coris monspeliensis (*l*; ½); Crocus biflorus (*pa la*, varying to *w*; ¼); C. speciosus (*l*, striped *p*); C. vernus (*l*, *v*, or *w*; ¼); C. varieties; Dahlia varieties; Dodecatheon Meadia (*l*, *pi-p*, or *w*; ¾-1¼); Fritillaria Hookeri (*pa*; ½); Funkia ovata (*b-l* or *w*; 1-1½); Geranium Lamberti (*l*; ¼); G. maculatum (*pa l*; 1½); Haberlea rhodopensis (*pa l*; ¼-½); Hyacinthus varieties (*l* and *mv*; ¾-1); Iris cretensis (*l*; ¾); I. cristata (*l*, marked *y*; ½); I. fœtidissima (*s-aq*, *b-l*; 2-3); I. Histrio (*l* and *p*); I. neglecta (*l* and *w*; 1½-2); I. nepalensis (*l*; ½-1); I. tectorum (*l* and *w*; 1 or more); I. unguicularis (*l*, keeled *y*); Lilium roseum (*l*; 1½); Linaria Cymbalaria (*l* or *b*); Merendera Bulbocodium (*pi-l*; ¼); Phlomis cashmeriana (*pa l*; 2); Phlox divaricata (*pa l* or *b*; ¾-1¼); P. varieties (*l* and *mv*); Primula Allionii (*mv*, *w* eye); P. altaica (*mv* or *p-r*, *y* centre; ¼-½); P. denticulata (*l*; ¾-1); P. d. pulcherrima (*d l*; ¾-1); P. japonica vars. (*l*; 1-1½); P. obconica (*pa l* or *p*; ½-1); P. sinensis (*pa l* or *w*; ¾); Salvia carduacea (*la*; 1); Saponaria officinalis (*l* or *w*; 1-3); Saxifraga oppositifolia pyrenaica; S. superba (*pi-l*); Scabiosa amœna (*l* or *pi*; 2-3); Scilla hyacinthoides (*b-l*; 1½-3½); S. peruviana (*l*, *r*, or *w*; 1-1½); Veronica longifolia (*l*; 2); Viola odorata vars. (*la*, *sc*).

Half-hardy.—ANNUALS.—Callistephus chinensis vars. (½-2); Schizanthus Grahami (*l* or *pi*; 2); Verbena varieties (*mv*).

PERENNIALS.—Gladiolus varieties (*l* and *mv*; 1-3); Ophiopogon japonicus intermedius (*l*; 1½); Petunia varieties (*l* and *mv*); Triteleia uniflora (*pa l*; 1); Verbena venosa (*l* or *b*; 2).

Lavender, Lilac, and Mauve—*continued.*

Tender.—ANNUAL.—Browallia grandiflora (*c-h*, *pa l* or *w*; 1-3).

PERENNIALS.—Achimenes Kleei (*i-h*, *l*, marked *y*; ½); A. multiflora (*i-h*, *l*; 1); Barkeria Lindleyana Centeræ (*c-h*, *pi-l*, lip blotched *p*; 2); B. melanocaulon (*c-h*, *pi-l*, lip *r-p* and *g*; 1); B. spectabilis (*c-h*, *pi-l*, lip marked *p* and *r*; 1); Calanthe Dominyi (*st*, *l*, lip *d p*; 1); Calochortus cœruleus (*c-h*, *l*, marked *d b*; ¼-½); C. Gunnisoni (*c-h*, *pa l*, *y-g*, and *p*); C. splendens (*c-h*, *l*; 1½); Didymocarpus primulæfolia (*st*, *l*; ¼-½); Epidendrum nemorale (*st*, *mv* or *pi-l*, lip striped *v*); Episcia chontalensis (*st*, *l*, *y* centre; ½); Gladiolus varieties (*c-h*; 1-3); Gloxinia varieties (*st*); Griffinia dryades (*i-h*, *p-l*, *w* centre; 1½); G. ornata (*i-h*, *b-l*; 1-1½); Hyacinthus varieties (*c-h*, *l* and *mv*, *sc*; ¾-1); Ixia capillaris (*c-h*, *l* or *pi*; 1½); Lachenalia lilacina (*c-h*; ¼-½); Lælia anceps (*c-h*, *pi-l*, lip *p* and *l*, *sc*; 1½); L. majalis (*c-h*, *l*, lip marked *r-p* and *w*; ¾); Nierembergia filicaulis (*c-h*, *y* centre; ½-1); Odontoglossum Cervantesii (*i-h*, *pi-l*, barred *r-br* at base); Podolepis gracilis (*c-h*, *l*, *p*, or *w*; 3); Pogonia Gammieana (*i-h*, *pa l*, *pi*, and *g*); Pterodiscus speciosus (*c-h*, *l* or *r*; 2); Sparaxis pendula (*c-h*, *l*; 4); Wahlenbergia saxicola (*c-h*, *pa l*; ¼-¾); Wigandia macrophylla (*c-h*; 10).

LILAC. *See* **Lavender, Lilac, and Mauve.**

MAUVE. *See* **Lavender, Lilac, and Mauve.**

PINK.—The shades are indicated by the following abbreviations: *d* (dark), *fl* (flesh), *pa* (pale), *ro* (rose), *sa* (salmon).

Hardy.—ANNUALS.—Agrostemma cœli-rosa (*pi* or *w*; 1); Armeria cephalotes (*ro* or *r*; 1-1½); Campanula Erinus (*b-pi*; ¼-¾); Centaurea Cyanus (varying to *b* and *w*; 2-3); Clarkia elegans vars. (2); Gilia androsacea rosacea (*ro*; ¾-1); G. micrantha (*ro*; ¾); Iberis umbellata carnea (*pa* or *fl*; ½-1); Lathyrus grandiflorus (*ro*); Linum grandiflorum (½-1); Malcolmia maritima vars. (*ro*; ½-1); Nonnea rosea (throat *y-w*; ½-1); Œnothera amœna (*ro*, spotted *r*; 1-2); Papaver somniferum vars. (3-4); Sabbatia campestris (*s-aq*, *ro*; 1); Saponaria calabrica (*ro*; ½-1); Silene Atocion; ½-1); S. pendula (*fl*); S. p. compacta (½).

BIENNIALS.—Althæa caribæa (*ro*, *y* base; 3); A. rosea (*ro*, &c.; 8).

PERENNIALS.—Acantholimon glumaceum (*ro*; ½); A. venustum (*ro*; ½-¾); Acanthus longifolius (*pi* or *p*; 3-4½); A. mollis (*pi* or *w*; 3-4) and var.; A. spinosissimus (3½); Achillea asplenifolia (*ro*; 1½); A. Millefolium roseum (*ro*; 1-3); Acis roseus (*ro*; ¼); Aconitum japonicum (*fl*; 6); Æthionema grandiflorum (*ro*; 1½); Alisma Plantago (*aq*, *pa ro*); Allium acuminatum (*d ro*; ½-¾); A. Bidwellii (*ro*; ½); A. Breweri (*d ro*; ½); A. falcifolium (*pa ro*; ½); A. roseum (*l-ro*; 1-1½); Alströmeria chilensis (*pi* or *r*, marked *y*; 2-3); Althæa cannabina (*ro*; 5-6); Anagallis tenella (*s-aq*; ½); Androsace Laggeri (½); Anemone japonica elegans (*pa ro*; 2-3); A. nemorosa rosea (*ro*; ½); Antennaria dioica (½); Anthyllis montana (*pi* or *p*; ½-½); Arabis arenosa (*ro*, rarely *w* or *p*; ½); Armeria dianthoides (*pa*; ½); A. juncea (*ro*; ½); A. juniperifolia (*d ro*; ½); A. plantaginea (*ro*; 1); A. setacea (*pa ro*; ½); A. vulgaris Laucheana (*da*; ½-1); Asperula montana (½-¾); Aster longifolius formosus (1½-2); A. novæ-angliæ rubra (*da*; 6); A. pendulus (*ro*, at first *w*; 2); Astilbe rubra (*ro*; 4-6); Astragalus pannosus (½-¾); Astrantia helleborifolia (1); A. major (1-2); Bellis perennis var. (½); Boltonia asteroides (*fl*; 2); B. glastifolia (1½); Butomus umbellatus (*aq*, *ro*); Calystegia pubescens flore-pleno (*fl*, turning *ro*); Centaurea dealbata (*ro*; 1-1½); Chrysanthemum varieties; Claytonia sibirica (*ro*; ½-½); Clintonia Andrewsiana (*d ro*; 2); Colchicum byzantinum (*pa ro*; ½); Corydalis Kolpakowskiana (*pi* or *p*; ½); Cynanchum roseum (*pi-r*; 1-1½); Dahlia varieties; Dianthus alpinus (*d ro*, spotted *r*; ½); D. cæsius (*ro*, *sc*; ½-½); D. Caryophyllus vars. (*sc*; 1½-2); D. deltoides (*ro*; ½-¾); D. fimbriatus (*ro*; 1); D. Fischeri

Pink (Hardy Perennials)—*continued.*

(*ro*; 1); D. neglectus (*d ro*; ¼); D. superbus (*ro*, *sc*; ¾-1½); Dodecatheon Meadia lancifolium (*y* at base; ¾-1¼); Douglasia nivalis (¼); Drypis spinosa (*pa pi* or *w*; ½); Echinacea angustifolia (*ro* or *pa p*; 2-4); Epilobium Dodonæi (*d ro*; 1); E. hirsutum (*pa pi* or *w*; 3-5); Eremurus robustus (peach; 8-9); Erythræa diffusa (*d ro*; ¼); E. Muhlenbergi (*d*, *g-w* star; ¾); Erythronium dens-canis (*p-pi* or *w*; ½); Fritillaria macrophylla (3); Geranium striatum (*d* veins; ¼); Habenaria psychodes (*ro*, varying to *r*); Helianthemum vulgare vars.; Hesperis matronalis vars. (*sc*; 2-3); Hyacinthus corymbosus (*l-ro*; ¼-½); H. varieties (*sc*; ¾-1); Incarvillea Olgæ (*ro*; 3-4½); Lathyrus roseus (*ro*); L. rotundifolius; L. sylvestris platyphyllus (*ro*); Lavatera trimestris (*ro*; 3-6); Lilium speciosum roseum (*ro*; 1-3); Lupinus leucophyllus (2-3); Lychnis alpina (½); L. diurna (*p-pi*; 1-3); L. Lagascæ (*ro*, *w* centre; ¼); L. pyrenaica (*pa fl*; ¼); L. Viscaria (*ro*; 1); Malva moschata (*ro*; 2-2½); Mimulus Lewisii (*ro*; 1); Morina longifolia (*pa*; 2); Nymphæa alba rosea (*aq*, *ro*); Œnothera californica (varying to *w*, *y* centre, *sc*; 2); Pæonia albiflora (2-3); P. varieties (*sc*); Papaver alpinum (*ro*, *y*, or *w*; ½); Pedicularis verticillata (*pi* or *w*; ½-1); Pentstemon breviflorus (*fl* or *y*, striped *pi* within; 3-6); P. campanulatus vars. (1½); P. heterophyllus (*pi* or *pi-p*; 1½); P. varieties; Phlox amœna (*pi*, *p*, or *w*; ½-1¼); P. glaberrima suffruticosa (*ro*; 2); P. pilosa vars. (1-2); P. subulata (*d* centre); P. varieties; Phuopsis stylosa (1); Physostegia virginiana (*fl* or *p*; 1½-4) and var.; Polygonum vaccinifolium (*ro*); Potentilla nitida (*ro*); Primula cortusoides (*d ro*; ½-¾); P. c. Sieboldii (*d ro*, *w* eye; ¾-1); P. marginata (*v-ro*; ¼); P. minima (*ro* or *w*; ⅛); Pulmonaria saccharata (1); Pyrethrum roseum (*ro*, disk *y*; 1-2) and vars.; Saponaria ocymoides (*pi* or *r*); Saxifraga peltata (*pa pi* or *w*); S. Stracheyi (¼-¾); Scabiosa amœna (*ro* or *l*; 2-3); Scilla hispanica carnea (*fl*; ¾-1); S. nutans rosea (*ro*); Scorzonera undulata (*p-ro*; 1-2); Sedum lydium (¼-½); S. spectabile (1½-2); Sempervivum Lamottei (*pa*, filaments *p*; 1); Silene acaulis (rarely *w*; ⅛); S. Elizabethæ (*ro*, claws *w*; ¾); S. Hookeri (*pa*); S. pennsylvanica (¼-¾); Teucrium Chamædrys (*ro*, lower lip spotted *w* and *r*; ½-1); Trillium grandiflorum (at first *w*; 1-1½); Tulipa varieties; Vicia argentea (keel spotted *bk*; 1).

Half-hardy.—Annuals.—Abronia umbellata (*ro*, *sc*; ½-2); Acroclinium roseum (1-2); Calandrinia grandiflora (*ro*; 1); Callistephus chinensis vars. (½-2); Gomphrena globosa carnea (1½); Impatiens Balsamina vars. (1-2); Phlox Drummondii vars. (1); Schizanthus Grahami retusus (*d ro*; 2); Verbena varieties; Zinnia elegans varieties (2).

Biennial.—Adlumia cirrhosa (*pa*; 15).

Perennials.—Androsace carnea (*y* eye; ¼); A. Chamæjasme (*y* eye; ¼); A. lanuginosa (*pa ro*, *y* eye; ½-¾); A. sarmentosa (*ro*, *w* eye; ¼); A. villosa (*sc*; ¼); Aponogeton spathaceum junceum (*aq*, *pa*); Caloscordum nerinæflorum (*ro*; ½); Conandron ramondioides (*p* eye, or *w*; ½); Frankoa sonchifolia (2); Gladiolus floribundus (*fl*, varying to *w*; 1); G. varieties (*fl*, *ro*, &c.; 1-3); Lathræa squamaria (*fl* or *b*, streaked *p* or *d r*; ¼-1); Petunia varieties; Sedum Sieboldi (¾); Statice callicoma (1); Zephyranthes carinata (tube *g*; 1); Z. rosea (*ro*, *g* below; ½).

Tender.—Annuals.—Drosera peltata (*c-h*; 1); Waitzia nivea (*c-h*, *pi*, *w*, or *pa y*; 1½).

Biennials.—Cleome rosea (*st*, *ro*; 1½); Convolvulus erubescens (*c-h*, *r-pi*); Humea elegans (*c-h*, *pi* or *r*; 5-6).

Perennials.—Abronia umbellata (*c-h*, *ro*, *sc*; ½-2); Æchmea fasciata (*st*); Aerides affine (*st*, *ro*; 3); A. roseum (*st*, *ro*, spotted; 1); A. r. superbum (*st*); Alpinia nutans (*st*, *sc*; 13); Amomum Melegueta (*st*, *pa*; 1-2); Amorphophallus Rivieri (*st*, *g-pi*, &c.); Barkeria elegans (*c-h*, *d ro*, lip *r*; 2); B. Skinneri (*c-h*, *d ro*; 1½); B. S. superbum (*c-h*, *d ro*, lip streaked *y*; 1½); Begonia amabilis (*i-h*, *pi* or *w*); B. amœna (*i-h*, *pa ro*); B. Berkeleyi (*i-h*, *ro*); B. coriacea (*i-h*, *ro*; ½); B. Evansiana (*i-h*, *fl*; 2); B. gogoensia (*i-h*, *pa ro*); B. gracilis (*i-h*; 1-2); B. hydrocotylifolis (*i-h*, *ro*; 1); B. malabarica (*i-h*, *ro*; 2); B. manicata (*i-h*; 2); B. natalensis (*i-h*, *pa ro*; 1½); B. picta (*i-h*, *pa ro*; ½-1); B. Richardsiana diadema (*i-h*, *ro*; 1); B. rosæflora (*i-h*, *ro*; ½); B. semperflorens (*i-h*, *pi* or *w*; 2); B. socotrana (*i-h*, *ro*); B. Verschaffeltiana (*i-h*, *ro*); B. varieties (*i-h*); Billbergia Lietzei (*st*, *ro*); Bletia florida (*st*, *pa ro*; 2); Bomarea Carderi (*c-h*, *ro*, spotted *p-br*); B. Williamsii (*c-h*, *ro*); Bromelia bracteata (*st*, bracts *r*; 2); Brunsvigia toxicaria (*i-p*; 1); Burlingtonia decora (*st*, *pi* or *w*, spotted *r*); B. d. picta (*st*, blotched *p*); Calanthe Veitchii (*st*, throat *w*; 3); Calochortus lilacinus (*c-h*, *pa*; ½-¾); Canna Annæi (*st*, *sa*; 6); C. Rendatleri (*st*, *sa-r*; 6-8); Cattleya dolosa (*i-h*, lip marked *y*); C. Dominiana lutea (*i-h*, *pa*, lip *w* and *y*); C. eldorado (*i-h*, *pa*, lip marked *p-r* and *o*); C. e. splendens (*i-h*, *ro*, lip *o*, *w*, and *v-p*); C. Harrisoniæ (*i-h*, *ro*, lip tinged *y*; 2); C. intermedia (*i-h*, *ro* or *ro-p*, lip blotched *v-p*; 1); C. i. superba (*i-h*, *ro*, lip *p*; 1); C. labiata (*i-h*, *d ro*, lip *r*; 1½-2); C. l. Pescatorei (*i-h*, *pa ro*, lip *r*; 1½-2); C. maxima (*i-h*, *ro*, lip *pa*, marked *p-r* and *o*; 1-1½); C. Mendelli (*i-h*, *pa*, varying to *w*, lip *m*); C. Mossiæ (*i-h*; 1) and vars; C. Sedeniana (*i-h*, *pa*, shaded *g*, lip *p* and *w*); C. speciosissima (*i-h*, *fl*, lip *b*, *w*, and *y*); C. Trianæ (*i-h*, marked *o* or *y*, and *p*) and vars.; C. Walkeriana (*i-h*, *ro*, lip tinged *y*, *sc*; ¼-½); C. Warneri (*i-h*, *d ro*, lip *d r*); Centropogon fastuosus (*c-h*, *ro*; 2); Chironia floribunda (*c-h*; 2); Chysis aurea Lemminghei (*st*, *ro*; 1); Cœlogyne Wallichiana (*i-h*, *ro*, lip banded *w*, *sc*; 1); Comparettia macroplectron (*i-h*, *pa ro*, speckled *r*; ½); Crassula Bolusii (*c-h*, *pa fl*; ¼-½); Cyanella odoratissima (*c-h*, *sc*; 1); Cyanotis kewensis (*st*, *ro*); Dendrobium bigibbum superbum (*c-h*, *ro*; 1); D. Parishii (*st*, *ro*; ¾-1); D. Pierardii (*c-h*, *pa*, or *c*, lip *y* and *p*; D. superbum anosmum (*st*, *ro*, lip *p*); Epidendrum dichromum (*c-h*, *pa ro*, lip *r*; 2-3); Gesneran ægelioides (*st*, *ro*, marbled *r*, throat *y* and *r*); Gladiolus varieties (*c-h*; 1-3); Gloxinia varieties (*st*); Hessea crispa (*c-h*; ¼); Hippeastrum reticulatum (*i-h*, *pi* and *w*; 1); Hyacinthus varieties (*c-h*, *sc*; ¾-1); Isoloma Ceciliæ (*st*, *ro*; 1-1½); Ixia capillaris (*c-h*, *fl* or *l*; 1½); I. patens (*c-h*; 1); Lælia anceps Leeana (*i-h*, *ro*, lip *w* and *p*, *sc*; 1½); L. a. Warnerii (*i-h*, *ro*, lip *r*, *sc*; 1½); L. autumnalis (*i-h*, *ro*, lip *ro-w* and *y*, *sc*; 1); L. elegans Turneri (*i-h*, *ro*, lip *m-ro*; ¾); L. præstans (*i-h*, *d ro*, lip *r-p*); L. superbiens (*i-h*, *ro*, streaked *r*, lip *r* and *y*; 5); L. Wallisii (*i-h*, *ro*, lip marked *y*); Lotus australis (*c-h*, variable; 2); L. gebelia (*c-h*, *ro*); Miltonia Regnelli (*st*, *pa ro*; 1); M. vexillaria (*st*, *ro* and *w*); Nerine flexuosa excellens (*c-h*, *ro*, ribbed *r*; 1); N. f. pulchella (*c-h*, *pa*, striped *r*; 2); N. sarniensis (*c-h*, *pa sa*; 2-2½); N. undulata (*c-h*, *fl*; 1); Nymphæa Sturtevantii (*st aq*); Oxalis rosea (*c-h*, *ro*; ½-1); Pelargonium fissum (*c-h*, *pa*; 1); P. varieties (*c-h*); Phalænopsis Esmeralda (*st*; 1); P. Sanderiana (*st*, *ro*, lip *w*, *br*, *p*, and *y*); P. Schilleriana (*st*, *ro*, centre of lip *w* and *y*); Primula mollis (*c-h*, *ro* and *r*; 1-1½); Rivina humilis (*st*, *pa ro*; 1-2); R. lævis (*st*, *pa ro*; 7-8); Romulea speciosa (*c-h*, *ro*, striped *v* and *y* at base; ½); Ruellia Portellæ (*st*, *ro*; 1); Saccolabium rubrum (*st*, *d ro*; ¾); Satyrium nepalense (*c-h*, *ro*; 1); Sedum Ewersii (*c-h*, *pi* or *pa v*; ½); S. Sieboldi (*c-h*; ¾); Siphocampylos glandulosus (*st*, *ro*; 3); Spathoglottis rosea (*st*, *ro*); Streptocarpus Dunnii (*c-h*, *ro*, tinged *r*; 1); Stylidium graminifolium (*c-h*; ½-1½); Swainsona Greyana (*c-h*; 2-3); Tydæa amabilis (*st*, *d ro*, spotted *p*; 1-2); Watsonia rosea (*c-h*, *ro*; 2).

PURPLE AND VIOLET. — The shades are indicated by the abbreviations *d* (dark) and *pa* (pale).

Hardy. — Annuals. — Æthionema saxatilis (*p*; ½); Agrostemma cœli-rosa purpurea (*p*; 1); Amarantus caudatus (*d p*; 2-3); Borago officinalis (*p*, *b*, or *w*; 1-2); Cerinthe retorta (*p*, tube *y*; 1½); Clarkia pulchella (*p*; 1½-2); Collinsia grandiflora (*p*; 1); Eucharidium concin-

Purple and Violet (Hardy Annuals)—*continued.*

num (*l-p*; 1); Gilia tricolor vars. (*v*; 1); Iberis umbellata (*p*; ½-1) and vars.; Impatiens amphorata (*p*, marked *pi-r*; 3-6); I. Roylei (*p*; 10); Ipomœa purpurea (*p*); Lathyrus odoratus vars. (*p* and *v*, *sc*); Linaria bipartita (*v-p*; 1); L. reticulata (*d p*; 2-4); Lopezia coronata (*pi-p*; 1½); Malope trifida (*p* or *w*; 1); Mathiola annua vars. (1-2); Œnothera amœna rubicunda (*l-p*, blotched; 2); Papaver somniferum vars. (*v*; 3-4); Polygonum orientale (*pi-p* or *w*; 3-10); Scabiosa atropurpurea vars. (*sc*; 2-3); Sedum farinosum (*pa r-p*); Vicia onobrychioides (*p*; 2); Xeranthemum annuum (*p*; 2).

BIENNIALS.—Campanula sibirica divergens (*v*; 1½); Digitalis purpurea (*p*, varying to *w*; 3-5); Hesperis grandiflora vars. (*p*, *sc*; 4); H. tristis vars. (*d p*, *sc*; 1-2); Silybum Marianum (*pi-p*; 1-4); Tragopogon glaber (*p*; 1½).

PERENNIALS.—Acanthus longifolius (*p* or *pi*; 3-4½); Aconitum autumnale (*b-p*; 3-4); A. delphinifolium (*b-p*; ½-2); A. Halleri (*v*; 4-6); A. lycoctonum (*v*; 4-6); A. paniculatum (*v*; 2-3); A. rostratum (*v*; 1-2); A. Willdenovii (*b-p*; 2-3); Agrostemma flos-Jovis (*p* or *r*; 1½); Ajuga pyramidalis (*p* or *b*; ½); Allium Murrayanum (*pi-p*; 1); A. nigrum (*v* or *w*; 2½-3¼); A. pedemontanum (*pi-p*; 1); Anemone Halleri (*p*; ½); A. patens (*p* or *y*; 1); A. p. Nuttalliana (*p* or *c*; 1); A. pratensis (*d p*; ½-1); A. Pulsatilla (*v*; ½-1); A. ranunculoides, Pyrenean var. (*p*; ¼); A. stellata (*p*, *pi-r*, or *w*; ¾); A. virginiana (*pa p* or *g-p*; 2); Anthyllis montana (*p* or *pi*; ¼-½); Antirrhinum tortuosum (*p*; 1-1½); Apios tuberosa (*br-p*, *sc*); Aquilegia Bertoloni (*b-v*; 1); Arabis blepharophylla (*pi-p*; ¼); A. rosea (*pi-p*; 1); Arenaria purpurascens (*p*; ½); Arethusa bulbosa (*pi-p*; ¾); Arisæma Griffithii (*br-v*; 1-1½); Arum proboscideum (*g-p*; ½); Asclepias amœna (*p*, corona *r*; 2-3); A. incarnata (*p* or *r*; 2); A. syriaca (*pa p*, *sc*; 3-5); Aster alpinus (*p*; ½-¾); A. altaicus (*b-p*; 1); A. Amellus (*p*; 2); A. A. Bessarabicus (*p*; 2½); A. argenteus (*p*; 1); A. caucasicus (*p*; 1); A. concinnus (*p*; 2); A. Douglasii (*p*; 3-4); A. floribundus (*pa p*; 4); A. grandiflorus (*p*; 2); A. novæ-angliæ (*p*; 6); A. peregrinus (*b-p*; 1); A. pulchellus (*p*; 1); A. salsuginosus (*v-p*; ¾-1½); A. s. elatior (*v-p*; 2); A. sikkimensis (*p*; 3); A. versicolor (*p*, at first *w*; 3); Astragalus adsurgens (*b-p*; ½); A. onobrychioides (*p*; ¾-1); A. sulcatus (*pa v*, marked *br* and *w*; 2-3); Berkheya purpurea (*p*; 3); Biarum tenuifolium (*d br-p*; ½); Bletia hyacinthina (*p*; 1); Brodiæa grandiflora (*b-p*; 1½); B. Howellii (*b-p*; 1½-2); B. multiflora (*b-p*; 1-1½); Bulbocodium vernum (*v-p*, spotted *w*; ½); Calamintha grandiflora (*p*; 1); Callirhoe digitata (*r-p*; 2-3); Calopogon pulchellus (*p*, lip bearded *y*; 1½); Calystegia dahurica (*pi-p*); Campanula bononiensis (*b-v*; 2-3); C. Burghalti (*pa p*; 2); C. carpathica pallida (*pa p*; ½-1); C. c. turbinata (*d p*; ½-1); C. Elatines (*b-p*; ¼-½); C. fragilis (*l-p*; ¼-½); C. glomerata (*b-v* or *w*; 1-2); C. nobilis (*r-v* or *w*; 2); C. peregrina (*v*; 2); C. Portenschlagiana (*pa b-p*; ½-¾); C. rapunculoides (*b-v*; 2-4); C. speciosa (*p*, *b*, or *w*; 1-1½); Cardamine pratensis (*pa p*; 1-1½); C. rhomboidea-purpurea (*pi-p*); Cedronella cordata (*pa p*; ¼-½); Centaurea atropurpurea (*d p*; 3); Chelone Lyoni (*p*; 3-4); C. nemorosa (*pi-p*; 1); C. obliqua (*pa p*; 2-3); Chrysanthemum varieties; Cnicus acaulis (*p*; 2); C. altissimus (*p*; 3-10); C. undulatus (*p*; 1); Colchicum autumnale (*p*; ¼) and vars.; C. Bivonæ (checkered *p* and *w*); C. montanum (*l-p* or *w*; ¼); C. Parkinsoni (tessellated *p* and *w*); Convolvulus lineatus (*r-p*; ½); Corydalis cava (*p*; ½); C. Kolpakowskiana (*p* or *pi*; ½); C. solida (*p*; ½); Crocus Imperati (*l-p*, *sc*; ¼-½); C. iridiflorus (*p*, inner segments *l*; ¼); C. nudiflorus (*pa p* or *v*; ½); C. vernus (*v*, *l*, or *w*; ¼); C. varieties; (*p*); Cypripedium macranthum (*d p*; ¾-1); Dahlia varieties; **Dentaria digitata (*p*; 1½); Dianthus Caryophyllus vars.** (*p*, &c., *sc*; 1½-2); D. plumarius (*p*, &c., *sc*; ¾-1); D. Seguierii (*pi-p*; 1); Dicentra eximia (*r-p*; ¾-1½); Dictamnus albus var. (*pa p*; 1-1½); Dodecatheon Meadia (*pi-p*, *w*, or *l*; ¾-1¼); D. M. frigidum (*d r-p*; ¾-1¼); Draba violacea (*v-p*; ½-1); **Echinacea angustifolia** (*pa p* or *pi*; 2-4); E. purpurea

Purple and Violet (Hardy Perennials)—*continued.*

(*r-p*, tipped *gy-g*; 3-4); Epilobium obcordatum (*pi-p*); Epimedium macranthum violaceum (*v*; ¾-1¼); Erigeron glaucus (*p*; ½-1); E. grandiflorus (*p* or *w*; ¼-¾); E. multiradiatus (*p*, disk *y*; ½-2); E. Roylei (*b-p*, disk *y*; ¼-¾); E. speciosus (*v*, disk *y*; 1½); Erinus alpinus (*p*; ½); Erodium macradenum (*pa v*; ½); Fritillaria delphinensis (*p*; ½-1); F. Meleagris (1); F. pyrenaica (*d p*; 1½); Geranium atlanticum (*p*, veined *r*; 1-1½); G. dahuricum (*p*; 1½); G. macrorhizon (*r* or *p*; 1); G. sylvaticum (*p* or *b*, veined *r*; 2); G. Wallichianum (*p*; ¼); Geum coccineum (*p*; ½-1¼); Habenaria fimbriata (*l-p*; 1-1½); Helleborus olympicus (*p*; 2); Hesperis matronalis vars. (*sc*; 2-3); Hottonia palustris (*aq*, *l*, *y* eye; 1-2); Hyacinthus varieties (*p*, *sc*; ¾-1); Iberis Tenoreana (*p* or *w*; ½); Iris (Xiphion) alata (*l-p*; ½); I. balkana (*l-p*; 1); I. biflora (*v-p*; 1½); I. Douglasiana (*l-p*; ½-1); I. (Xiphion) filifolia (*d p*; 1-2); I. germanica (*p* and *l*, *sc*; 2-3); I. lævigata (*s-aq*, *d p*; 1); I. pumila (*l-p*, bearded *w*; ¼-½); I. (Xiphion) reticulata (*d v-p*; ¼); I. rubro-marginata (*p*; ¼); I. sambucina (*p* and *y*, *sc*; 2); I. (Xiphion) tingitana (*l-p*; 2-3); I. tuberosa (*p*; 1); I. versicolor (*pa* and *d p*; 1-2); I. (Xiphion) vulgare (*p*; 1-2); I. (Xiphion) xiphioides (*l-p*, flushed *y-br*; 1-2); Lactuca macrorhiza (*v-p*; ½-3); Lathyrus magellanicus (*b-p*); Lilium Martagon (*p-r*, spotted *p*; 2-3); L. oxypetalum (*l-p*; 1-1½); L. polyphyllum (*p* and *w*; 2-3); Linaria alpina (*b-v*; ½); L. hepaticæfolia (*l-p*; ¼); L. purpurea (*b-p*; 1-3); L. triornithophora (*p*, *y* palate); Liparis lilifolia (*br-p*); Lophanthus scrophulariæfolius (*p*; 5); Lysimachia atropurpurea (*d p*; 2); Mazus pumilio (*pa v*); Moltkia petræa (*d v-b*; ½); Monarda fistulosa (*p*; ½); Moræa edulis (*v*; 4); Muscari comosum monstrosum (*b-v*; 1-1½); Onopordon Acanthium (*p*; 4-5); Orchis foliosa (*p*; 1½-2½); O. latifolia (*p* or *r*; 1); Orobus flaccidus (6); Oxalis tetraphylla (*p-v* or *r*); Pæonia varieties (*sc*); Pentstemon campanulatus vars. (*v* or *d p*; 1½); P. diffusus (*p*; 1½); P. glaber (*v*, *p*, or *b*; ½-1); P. gracilis (*l-p* or *w*; 1); P. heterophyllus (*pi-p* or *pi*; 1½); P. Menziesii Douglasii (*l-p*, *p-r* at base; 1); P. pubescens, (*v* or *p*; 1-3); P. venustus (*p*; 2); P. varieties; Petalostemon violaceus (*pi-p*; 1); Phalaris arundinacea (*p*; 3-5); Phlomis herba-venti (*p-v*; 1-1½); Phlox amœna (*p*, *pi*, or *w*; ½-1¼); P. maculata (*p*, *sc*; 2); P. ovata (*r-p*; 1-1½); P. paniculata (*pi-p*, varying to *w*; 3-4); P. pilosa vars. (*p*; 1-2); P. reptans (*p* or *v*); P. varieties (*p*); Physochlaina physaloides (*p-v*; 1-1½); Physostegia virginiana (*p* or *w-pi*; 1½-4) and var.; Phyteuma comosum (*p* or *b*; ¼-½); Plumbago Larpentæ (*v*; 1); Polemonium humile (*p* or *b*; ½); Prenanthes purpurea (*p*; 4); Primula auriculata (*p*, *w* eye; ¼); P. calycina (*p*); P. denticulata cashmeriana (*pa p*, *y* eye); P. farinosa (*pa p*, *y* eye; ¼-1); P. glutinosa (*b-p*; ¼); P. obconica (*p* or *pa l*; ½-1); P. scotica (*p*, *y* eye); P. Steinii (*p*); P. viscosa (*pi-p*, *w* eye; ¼); P. v. pedemontana (*pi-p*, *y-w* eye; ½); Ramondia pyrenaica (*p*; ¼); Ranunculus asiaticus vars. (*p*; ¾); R. parnassifolius (*p* or *w*; ¼-½); Romulea Bulbocodium (*v*, *y* below; ½); Rudbeckia purpurea (*r-p*; 3-4); Salvia discolor (*p* and *v-bk*; 2-3); S. interrupta (*v-p*, *r-p*, and *w*; 3-4); Saussurea pulchella (*p*; 2); Saxifraga moschata (*p* or *pa y*; ¼); S. oppositifolia (*p*); S. purpurascens (*p*; ¼-½); S. retusa (*p*; ½); Scilla nutans vars. (*p*); Scutellaria alpina (*p*, or *p* and *y*); Sedum pulchellum (*pi-p*; ¼); S. Rhodiola (*r-p* or *g*; ¾); Sempervivum Funckii (*r-p*; ½-¾); S. montanum (*mv-p*; ½); Senecio pulcher (*p*, disk *y*; 1-2); Silene Schafta (*p*; ½); Sisyrinchium grandiflorum (*p*; ¾); Soldanella alpina (*v*; ¼); S. montana (*p*; ¼); Stachys grandiflora (*v*; 1); Streptopus roseus (*pi-p*; 1½); Thermopsis barbata (*d p*; 1); Tradescantia virginica (*v*, *p*, or *w*; ½-2); Trifolium alpestre (*p*; ½-1); T. Lupinaster (*p*; 1-1½); Trillium erectum (*d p*; 1); Tulipa varieties (*v*); Veratrum nigrum (*bk-p*; 1-3); Vinca major (*b-p*); V. minor (*b-p*); Viola cucullata (*p* or *v-b*, &c.); V. Munbyana (*v* or *y*); V. odorata vars. (*p* or *v*, *sc*); V. tricolor vars. (*p* or *v*).

Purple and Violet—*continued.*

Half-hardy.—ANNUALS.—Amarantus speciosus (*r-p*; 3); Callistephus chinensis vars. (*p* and *v*; ½-2); Cobæa scandens (*d p*); Gomphrena globosa purpurea (*p*; 1½); Pennisetum longistylum (*p*; 1-1½); Phlox Drummondii vars. (*p*; 1); Verbena varieties (*p*); Zinnia elegans varieties (*v-p*; 2).

BIENNIALS.—Mathiola incana vars. (*p*; 1-2).

PERENNIALS.—Amaryllis Belladonna (*p*, &c.; 2); Anagallis linifolia Wilmoreana (*b-p*; ½); Caryopteris Mastacanthus (*v*; 2); Eryngium pandanifolium (*p*; 10 15); Gladiolus Papilio (*p*, marked *y*; 3); G. varieties (*p* or *v*; 1-3); Myosotis azorica var. (*b-p*; ½-¾); Oxalis arenaria (*v-p*; ¼); Petunia varieties (*p*); Sarracenia Drummondii (*p*; 2); S. psittacina (*p*; 1); S. purpurea (*p*; 1); S. rubra (*r-p*; 1-2); Scilla chinensis (*pi-p*; 1-1½); Tricyrtis macropoda (*pa p*; 2-3).

Tender.—ANNUALS.—Anisomeles ovata (*st*, *p*; 2-3); Euryale ferox (*st aq*, *v*); Impatiens flaccida (*st*, *p*; ½-1½); Martynia fragrans (*c-h*; 2); Salpiglossis sinuata vars. (*c-h*, *p*; 2).

BIENNIAL.—Ebenus Sibthorpii (*c-h*, *p*; 2).

PERENNIALS.—Achimenes grandiflora (*i-h*, *v-p*; 1½); Æchmea distichantha (*st*, *p*, bracts *r*; 1); Æ. glomerata (*st*, *v*, bracts *r*; 1½); Alocasia cuprea (*st*, *p-r*; 2); Amorphophallus Titanum (*st*, *bk-p* and *g*; 10); Anchomanes Hookeri (*st*, *pa p*, spadix *w*; 3); Arisæma galeata (*c-h*, *p* and *g*); A. speciosa (*c-h*, *d p*, *g*, and *w*); Arum palæstinum (*c-h*, *p*, *bk*, and *y-w*; 1½-2); Barbacenia purpurea (*i-h*, *sc*; 1½); B. Rogieri (*i-h*, *sc*; 1½); Barkeria Lindleyana (*c-h*, *pi-p*, *p*, and *w*; 2); Batatas bignonioides (*i-h*, *d p*); B. edulis (*i-h*, *p*, *w* outside); B. paniculata (*i-h*, *p*); Bifrenaria vitellina (*st*, *y-p*; 1); Billbergia Quesneliana (*st*, *d p*, bracts *pi*; 6); Bletia Shepherdii (*st*, *p*, lip marked *y*; 2); B. Sherrattiana (*st*, *pi-p*, marked *w* and *y*); Brachyspatha variabilis (*st*, *g-p*, spadix *w* and *o-r*; 3); Burlingtonia rigida (*st*, *p-w*, spotted *pi*; 1); Calanthe Masuca (*st*, *v*, lip *v-p*; 3); Calceolaria arachnoidea (*c-h*, *p*; 1); Calochortus purpureus (*c-h*, *p* and *y*; 3); Canarina Campanula (*c-h*, *y-p* or *o*; 3-4); Canna expansa rubra (*st*, *p*; 4-6); Cattleya Dawsoni (*i-h*, *pi-p*, *y*, and *pi*; 1); C. Skinneri (*i-h*, *pi-p*, lip *w* at base; 1½); Ceropegia elegans (*st*, *p*); Chironia jasminoides (*c-h*, *p* or *r*; 1-2); Cineraria cruenta (*c-h*, *r-p*; 2); C. varieties (*c-h*, *p*); Cirrhopetalum Cumingii (*st*, *r-p*; ½); Cobæa scandens (*c-h*, *d p*); Comparettia falcata (*i-h*, *pi-p*; ½); Crawfurdia fasciculata (*st*, *p*); C. speciosa (*st*, *p*); Cyclamen varieties (*c-h*, *p*, &c.); Cycnoches Egertonianum (*st*, *d p*; 2); Cymbidium bicolor (*st*, *pa p*, marked *r*; 1); Cypripedium barbatum (*st*, *p* and *w*; 1); Dendrobium Heyneanum (*st*, *v* and *w*; ¾); D. Kingianum (*c-h*, *v-p*; ½); D. lituiflorum (*st*, *pi-p*, lip *w* and *p*, 1½); D. superbiens (*st*, *pa p*, sometimes *r*, shaded *br*; 1-3); D. s. Goldiei (*st*, *v*; 1-3); Dichorisandra leucophthalmus (*st*, *b-p*, *w* at base; 1-1½); Drosera filiformis (*c-h*, *p*; 1); D. spathulata (*c-h*; ¼); Eichhornia crassipes (*st aq*, *v*); Epidendrum atropurpureum (*c-h*, *p* or *d pi*; ½-1); E. evectum (*st*, *pi-p*); E. paniculatum (*c-h*, *p* or *l-p*, column tipped *y*; 2-4); E. syringothyrsis (*st*, *d p*, marked *o* and *y*; 3); Epistephium Williamsii (*st*, *r-p*; 1); Gladiolus varieties (*c-h*, *p* or *v*; 1-3); Gloxinia varieties (*st*); Gymnostachyum venustum (*st*, *p*; ½); Hyacinthus varieties (*c-h*, *p*, *sc*; ¾-1); Hypoestes sanguinolenta (*st*, *p*, marked *w*; ½-1); Lælia caloglossa (*i-h*, *pa p*); L. Dayana (*i-h*, *pi-p*, lip margined *l* and *w*); L. Dominiana (*i-h*, *pa p*, lip *bk-p*); L. Jongheana (*i-h*, *b-p*, lip *p* and *y*); Lotus jacobæus (*c-h*, *bk-p*; 1-3); Maurandya Barclayana (*c-h*, *v-p*); M. scandens (*c-h*, *v-p*); Maxillaria variabilis (*i-h*, *p*); Mesembryanthemum Cooperi (*c-h*, *p*; ¼); M. cordifolium variegatum (*c-h*, *pi-p*); Miltonia spectabilis Moreliana (*i-h*, *p*, lip marked *pi*); Mormodes atropurpureum (*st*, *d p-br*; 1); Oncidium ornithorhynchum (*c-h*, *pi-p*, *sc*); Onoseris Drakeana (*c-h*, *p*); Oxalis elegans (*c-h*, *p*; ½); O. hirta (*c-h*, *pa v*, varying to *d r*; ¼); O. Martiana (*c-h*, *d p-pi*); Pelargonium glauciifolium (*ch*, *d p*); P. varieties (*c-h*); Peristrophe speciosa (*st*, *p* and *r-p*; 4); Phaius

Purple and Violet (Tender Perennials)—*continued.*

Bensonæ (*i-h*, *pi-p*, marked *y* and *w*; 1); Phalænopsis speciosa imperatrix (*st*, *pi-p*); P. Veitchiana (*st*, *p*); P. violacea (*st*, *v*, *r*, and *w*); Physidium cornigerum (*st*, *p*; 1); Podolepis gracilis (*c-h*, *w*, *p*, or *l*; 3); Rhœo discolor (*st*, *p* or *b*); Saccolabium calopterum (*st*, *p*, *w* at base); Salvia ianthina (*c-h*, *v-p*; 2); Sanchezia longiflora (*st*, *p*); Schomburgkia tibicinis grandiflora (*st*, *p*, *o*, *w*, and *y*); S. undulata (*st*, *br-p* and *v-p*); Sedum Ewersii (*c-h*, *pa v* or *pi*; ½); Senecio speciosus (*c-h*, *p*; 1); Sinningia speciosa (*st*, *v*, &c.); Sobralia Cattleya (*st*, *p* and *p-br*, lip crested *y*); Sophronitis violacea (*c-h*, *v*; ½); Sparaxis grandiflora stellaris (*c-h*, *p*; 1-2); Stelis Bruckmülleri (*c-h*, *pa p* and *y-p*); S. ciliaris (*c-h*, *d p*); Stylidium bulbiferum macrocarpum (*c-h*, *g-p*); Tacca pinnatifida (*st*, *p*); Thysanotus junceus (*c-h*, *p*; 1-2); T. tuberosus (*c-h*, *p*; ½-1); Tigridia atrata (*c-h*, *d p*, marked *g* and *br*; 2); T. Meleagris (*c-h*, *pa* and *d p*; 1½); Tillandsia ionantha (*st*, *pa v*; ¼); T. Lindeni (*st*, *b-p*, bracts *r*); Typhonium divaricatum (*st*, *d p*); Utricularia Humboldtii (*st*, *b-p*); Vanda suavis (*st*, *p* and *w*); Watsonia Meriana (*c-h*, *p* or *r*; ¾-2); Zygopetalum Gairianum (*st*, *v*, marked *p-mv*, *w-y*, &c.); Z. Sedeni (*c-h*, *p*).

RED.—The shades are indicated by the following abbreviations: *bd* (blood), *ca* (carmine), *cin* (cinnabar), *cr* (crimson), *d* (dark), *mar* (maroon), *pa* (pale), *s* (scarlet), *ver* (vermilion).

Hardy.—ANNUALS.—Adonis æstivalis (*cr*; 1); A. autumnalis (*bd*; 1); Anagallis grandiflora (*ver*, varying to *b*; ¼); Armeria cephalotes (*cr* or *pi*; 1-1½); Centranthus macrosiphon (*pi-ca*; 2); Clarkia elegans (*cr*; 2); Collomia coccinea (*d*; 1-1½); Crepis rubra (½-1); Delphinium Ajacis (*r*, *b*, or *w*; 1-1½); Fedia Cornucopiæ (½); Gaillardia amblyodon (*bd*; 2-3); G. pulchella (*cr*, tipped *y*; 2-3); Glaucium phœniceum (*cr*, spotted *bk*; ½); Iberis umbellata atropurpurea (*d cr*; ½-1); Lathyrus odoratus vars. (*sc*); Malcolmia maritima vars. (½-1); Mathiola annua vars. (1-2); Œnothera Whitneyi (*pi-r*, blotched *r*; 1-1½); Papaver Rhœas (*s*; 1) and vars; Scabiosa atropurpurea (*d cr*, *sc*; 2-3); Sedum sempervivoides (¼-½); Tropæolum majus vars.

BIENNIALS.—Anagallis fruticosa (*ver*; 2); Dianthus chinensis, variable (½-1); D. c. Atkinsoni (*bd*; ½-1); Eschscholtzia californica crocea var. (1); Hesperis tristis vars. (*b-r*, *sc*; 1-2).

PERENNIALS.—Agrostemma coronaria var. (*cr*; 1-2); A. flos-Jovis (*s* or *p*; 1½); Allium Macnabianum (*m*; 1); A. sphærocephalum (1½-2½); Alstrœmeria chilensis (*bd* or *pi*, marked *y*; 2-3); Althæa flexuosa (*s*; 2-3); A. narbonensis (*pa*; 3-6); Anemone fulgens (*ver* or *s*, stamens *bk*); A. japonica (*pi-ca*, anthers *y*; 2-3); A. multifida (*r* or *y*; ½-1); A. stellata (*pi-r*, *p*, or *w*; ¾); Apocynum androsæmifolium (1-2); Aquilegia canadensis (*s*, mixed *y*; 1-2); A. formosa (limb *y*; 2-4); A. fragrans (*pa*, or *w*; 1½-2); Armeria vulgaris, variable (½-1); Asarum caudatum (*br-r*); Asclepias incarnata (*r* or *p*; 2); Astilbe rivularis (*r* or *y-w*; 3); Bellis perennis conspicua (¼); Callirhoe involucrata (*cr*; ½); C. Papaver (*v-r*; 3); Calystegia Soldanella (*pa*); Centranthus ruber (2-3); Cheiranthus Cheiri vars. (*d*, *sc*; 1-2); Chrysanthemum varieties; Convolvulus althæoides (*pa*, or *l*); C. cantabricus (*pa*; ½-1); C. chinensis (*p-cr*, *y* star; 2-3); C. Scammonia (*pa*, or *cr*); Dahlia Juarezii (*s*; 3); D. varieties; Delphinium cardinale (*s*; 3-4); D. nudicaule (petals *y*; 1-1½); Dianthus alpestris (½-¾); D. atrorubens (*d*; 1); D. barbatus vars. (1-1½); D. Caryophyllus vars. (*sc*, 1½-2); D. cruentus (*bd-s*); Dodecatheon integrifolium (*pi-cr*; ¼-½); Dicentra formosa (½); D. spectabilis (*pi-cr*; ¾-2); Epilobium angustifolium (*cr*; 3-6); E. rosmarinifolium (2); Epimedium alpinum (*d cr*; ½-¾); E. rubrum (*cr*; ½-¾); Erodium Manescavi (*p-r*; 1-2); Fritillaria imperialis (*cr*, varying to *y*; 3); F. i. Aurora (bronzy *cr*; 3); F. i. Minature (*d*; 3); F. i. rubra maxima (3); F. recurva (*s*; 2); Geranium argenteum (¼); G. cinereum (½); G. macrorhizon (*p* or *d r*; 1); G. sanguineum

Red (Hardy Perennials)—*continued.*

(*cr* or *bd*; 1-2); Geum rivale (1-3); Gillenia trifoliata (varying to *w*; 1½); Gunnera scabra (4); Habenaria psychodes (*s*, varying to *pi*); Hedysarum coronarium (*d*; 3-4); H. c. flexuosum (tinged *b*; 3-4); Helianthemum vulgare vars.; Hesperis matronalis vars. (*sc*; 2-3); Heuchera americana (1½); H. sanguinea (*d*; ¾-1½); Hieracium aurantiacum (*o-r*; 1-1½); Hyacinthus varieties (*sc*; ¾-1); Lilium bulbiferum (2-4); L. canadense (*pa*, spotted, varying to *y*; 1½-3); L. c. parvum, (*o-r*, spotted *r-p*; 1½-2); L. Catesbæi (*o-r*, spotted *p*; 1-2); L. chalcedonicum (*s*, rarely *y*; 2-3); L. concolor Buschianum (*s*; 1-3); L. davuricum (*s*; 2-3); L. elegans (*pa s*); L. pardalinum Bourgæi (*o-r*, spotted *p*; 3-7); L. p. Robinsoni (*ver*, shading to *y*, spotted; 7-8); L. philadelphicum (*o-r*, spotted *p* below; 1-3); L. pomponium (*r* or tinged *o*; 1½-3); L. pseudo-tigrinum (*s*, dotted *bk* within; 3-4); L. superbum (*o-r*, spotted; 4-6); L. tenuifolium (*s*; ½-1); L. tigrinum (*o-r*, spotted *p-bk*; 2-4) and vars.; Lychnis chalcedonica (*s*; 1½-3½); L. coronaria (3); L. fulgens (*ver*; ½-1); L. f. Haageana (*s*, varying to *w*; ½-1); Malva Alcea fastigiata (2-3); Mimulus cardinalis (1-3); Monarda didyma (*s*; 1½); Orchis latifolia (*r* or *p*; 1); Ourisia coccinea (*s*; ½-1); O. Pearcei (*cr*, streaked *bd*); Oxalis tetraphylla (*r* or *p-v*); Oxytropis Lambertii (*pi-ca*; ½-1); Pæonia officinalis (*d cr*; 2-3); P. tenuifolia (*d cr*; 1-1½); P. varieties (*sc*); Papaver bracteatum (4); P. orientale (*s*; 2-3) and vars.; P. pilosum (*pa s* or *o*, marked *w*; 1-2); Pentstemon barbatus (*pi-r* to *ca*; 3); P. b. Torreyi (*d s*; 3); P. Eatoni (*cr-s*; 1½); P. Hartwegiana (*s* or *bd*; 2); P. Murrayanus (2-3); P. varieties; Phlox glaberrima (1-2); P. paniculata vars. (3-4); P. varieties; Polygonum affine (*pi-r*; ½-¾); P. amplexicaule (*pi-r* or *w*; 2-3); Primula altaica (*p-cr* or *mv*; ½-½); P. Auricula vars. (½); P. japonica vars. (*cr* or *mar*; 1-1½); P. officinalis vars. (½-1); P. rosea (*pi-ca*, *y* eye; ½); Salvia Rœmeriana (*d s*; 1-2); Saponaria ocymoides (*r* or *pi*); Saxifraga ligulata (*pa*; 1); Scilla bifolia (*r*, *b*, or *w*; ½); S. nutans rubra; S. peruviana (*r*, *w*, or *l*; 1-1½); Scopolia carniolica (*y* or *g* within; 1); Sempervivum arachnoideum (filaments *p*; ½) and var.; S. atlanticum (*pa*; 1); S. Boissieri (¾); S. calcaratum (*pa*; 1½); S. calcareum (*pa*, keeled *g*; 1); S. fimbriatum (½-¾); S. Moggridgei (¾); S. Pomelii (*pi-r*; ½-¾); Silene virginica (*d cr*; 1-2); Spiræa palmata (*cr*; 1-2); Statice tatarica (1); Symphytum bohemicum (*r* or *r-p*; 1-3); Tropæolum speciosum (*s*); Tulipa Eichleri (*s*, marked *bk* and *y*); T. elegans (*y* eye); T. Gesneriana vars.; T. Greigi (blotched *bk*); T. macrospeila (blotched *bk* and *y*); T. Oculus-solis (blotched *bk* and *y*; 1-1½); T. præcox (blotched *bk* and *y*); T. pubescens (*sc*); T. varieties.

Half-hardy.—ANNUALS.—Amarantus hypochondriacus (*d cr*; 4-5) and var.; Calandrinia Menziesii (*d p-cr*); Callistephus chinensis vars (½-2); Gomphrena globosa nana (1½); Impatiens Balsamina (1-2); Mimosa pudica (1); Mirabilis Jalapa (*cr*, *w*, or *y*; 2); Phlox Drummondii vars. (1); Salvia coccinea (*s*; 2); Verbena varieties; Zinnia elegans vars. (*s*, *cr*, &c.; 2).

PERENNIALS.—Amaryllis Belladonna (*r* or *w*, &c.; 2); Amphicome arguta (3); Anagallis linifolia vars. (¾-1); Androsace carnea eximia (*pi-cr*, *y* eye; ½); Anomatheca cruenta (*ca-cr*; ½-1); Bessera elegans (*s*, or *s* and *w*; 2); Blumenbachia chuquitensis (*y* within); Brodiæa coccinea (*bd*, *y-g* at apex; 1½); Crocosmia aurea (*o-r*; 2); Gladiolus brachyandrus (*pa s*; 2); G. cardinalis (*s*; 3-4); G. Colvillei (marked *p*; 1½); G. cruentus (*s*, *y-w* at base; 2-3); G. psittacinus (*s*, marked *y*, tube *g* and *p*; 3); G. Saundersii (*cr*, spotted *w*; 2-3); G. varieties (1-3); Kniphofia aloides (coral-*r*, fading to *o*; 3-4) and vars.; K. Burchelli (*s* and *y*, tipped *g*; 1½); K. Leichtlinii (*pa ver* and *y*); K. Rooperi (*o-r*, turning *y*; 2); Lobelia cardinalis (*s*; 1-2); L. splendens (*s*; 1-2); Schizostylis coccinea (3).

Tender.—ANNUALS.—Celosia cristata (*st*, *d*; ¾); Salpiglossis sinuata vars. (*c-h*; 2); Mimosa pudica (*st*; 1).

BIENNIAL.—Humea elegans (*c-h*, *br-r*, *cr*, or *pi*; 5-6).

Red (Tender)—*continued.*

PERENNIALS.—Achimenes pedunculata (*i-h*, *y* eye; 2); A. picta (*i-h*, *y* eye; 1½); Ada aurantiaca (*st*, *o-s*, streaked *bk*); Æchmea discolor (*st*, *s*; 2); Æ. fulgens (*st*, tipped *b*; 1); Æ. hystrix (*st*, *s*; 2½); Æ. spectabilis (*st*, *pi-cr*); Æ. Veitchii (*st*, *s*; 1); Agalmyla staminea (*st*, *s*; 2); Alströmeria caryophyllæa (*st*, *s*, *sc*; ¾-1); A. densiflora (*c-h*, *s*, spotted *bk*); Amomum angustifolium (*st*, *r* or *y*; 8); Ananas macrodonta (*st*, tinted buff); Anguloa Ruckeri sanguinea (*c-h*, *d bd*; 1½); Anigozanthus coccineus (*c-h*, *s*; 5); Antholyza caffra (*c-h*, *s*; 2); Anthurium Andreanum (*st*, *o-r*, spadix *y*; 1); A. Bakeri (*st*, *s* and *pi*; 1); A. ferrierense (*st*); A. Scherzerianum (*st*, spadix *o*; 1-1½) and vars.; Arpophyllum spicatum (*i-h*, *d*; 1½); Asclepias curassavica (*st*, *o-s*; 1-3); Babiana ringens (*c-h*, *s*; ½-¾); B. stricta villosa (*c-h*, *cr*; ½); Batatas Cavanillesii (*i-h*, *pa*); Begonia boliviensis (*i-h*, *s*; 2); B. Chelsoni (*i-h*, *o-r*; 2); B. Clarkii (*i-h*; 1½); B. Davisii (*i-h*; ½); B. Frœbeli (*i-h*, *s*; ¾); B. geranioides (*i-h*, waved *w*; 1½); B. magnifica (*i-h*, *pi-ca*; 2); B. Sutherlandi (*i-h*, *o-r*, shaded *p-r*; 1-2); B. Veitchii (*i-h*, *cin*; 2); B. varieties (*i-h*); Blandfordia Cunninghamii (*c-h*, *y* above; 1); B. flammea elegans (*c-h*, *c*, tipped *y*; 2); B. princeps (*c-h*, *o-r*, *y* within; 1); B. grandiflora (*c-h*, *c*; 2); Blumenbachia contorta (*c-h*, *o-r*); Bomarea oligantha (*c-h*, *y* within); B. patococensis (*c-h*, *c*); B. Shuttleworthii (*c-h*, *o-ver* and *y*, spotted); Bravoa geminiflora (*c-h*, *o-r*; 2); Bromelia bicolor (*st*, *s*); Broughtonia sanguinea (*st*, *bd*; 1½); Brunsvigia falcata (*i-h*; ¾); B. Josephinæ (*i-h*, *s*; 1½); B. multiflora (*i-h*; 1); Burbidgea nitida (*st*, *o-s*; 2-4); Canna Achiras variegata (*st*, *d*; 4); C. Annæi fulgida (*st*, *o-r*; 3-5); C. A. rosea (*st*, *ca-pi*; 5); C. Auguste Ferrier (*st*, *o-r*; 10); C. Bihorelli (*st*, *d cr*; 6-7); C. discolor (*st*; 6); C. gigantea (*st*, *o-r* and *p-r*; 6); C. limbata (*st*, *y-r*; 3); C. nigricans (*st*, coppery *r*; 4½-8); C. Van-Houttei (*st*, *s*); C. Warscewiczii (*st*, *s* and *p*; 3); Cattleya marginata (*i-h*, *pi-cr*, lip *pi* and *w*; 1); Centropogon Lucyanus (*st*, *pi-ca*); Ceropegia Thwaitesii (*st*, *bd*, tube *y*); Chironia jasminoides (*c-h*, *r* or *p*; 1-2); C. linoides (*c-h*; 1-2); Cineraria varieties (*c-h*); Clianthus Dampieri (*c-h*, *bk* or *p* blotch; 2); Cœlia macrostachya (*i-h*; 1½); Comparettia coccinea (*i-h*, *s*, lip tinged *w*; ½); Costus igneus (*st*, *o-s*; 1-3); Crinum amabile (*st*, *sc*; 2-3); C. cruentum (*st*; 2); Curcuma Roscoeana (*st*, *s*, bracts *o*; 1); C. rubricaulis (*st*; 1); Cyclamen Coum (*c-h*, *d*; ¼); C. ibericum (*c-h*; ¼); C. neapolitanum (*c-h*, *r* or *w*, *v-p* spot; ¼); C. varieties (*c-h*); Cymbidium pendulum purpureum (*d*, lip *w* and *cr*; 2); Disa grandiflora Barrellii (*c-h*, *o-s*, lip veined *cr*; 2-3); D. g. superba (*c-h*, *s* and *cr*, veined *pi*; 2-3); Episcia fulgida (*st*, *ver*; ½); Falkia repens (*c-h*, *pa* throat); Fittonia gigantea (*st*, *pa*; 1½); Gesnera Cooperi (*st*, *s*, throat spotted; 2); G. Donkelaariana (*st*, *ver*; 1-2); G. exoniensis (*st*, *o-s*, *y* throat); G. pyramidalis (*st*, *o-r*, throat and lip *o*); Gladiolus varieties (*c-h*; 1-3); Gloxinia varieties (*st*); Hæmanthus abyssinicus (*st*, *s*; ½); H. cinnabarinus (*st*; 1); H. Kalbreyeri (*st*, *cr*; ½); H. Katherinæ (*st*, *d*); Hedychium angustifolium (*st*; 3-6); Hibiscus coccineus (*c-h*, *s*; 4-8); Hippeastrum Ackermanni (*i-h*, *cr*); H. equestre ignescens (*i-h*, *s*, marked *w*; 1); Homalomena Wallisii (*st*); Hyacinthus varieties (*c-h*, *sc*; ¾-1); Impatiens Sultani (*st*, *s*); I. Walkeri (*st*, *s*; 1-1½); Ixia speciosa (*c-h*, *d*; ½); Kennedya prostrata (*c-h*, *s*); K. p. Marryattæ (*c-h*, *pa s*); K. rubicunda (*c-h*); Lachenalia fragrans (*c-h*, *sc*; ½); Lælia autumnalis atrorubens (*i-h*, *r* or *m-p*, lip *w* below, *sc*; 1); L. cinnabarina (*i-h*, *cin*; 1-1½); L. flammea (*i-h*, *o-s*, lip *p-cr*); L. harpophylla (*i-h*, *o-s*, lip blotched *w*); L. monophylla (*i-h*, *o-s*); Lobelia fulgens (*c-h*, *s*; 1-2); Lycoris Sewerzowi (*c-h*, *br-r*; 1); Masdevallia amabilis (*c-h*, *o-ca*; ½); M. ignea (*c-h*, often shaded *cr* or *r-pi*; ½); M. Lindeni conchiflora (*c-h*, *pi-r*); L. regalis (*c-h*, *cr*); Nerine curvifolia (*c-h*, *s*); N. flexuosa (*c-h*, *cr-s*, tinged *o*; 1); N. sarniensis corusca (*c-h*, *o-s*; 1); N. s. venusta (*c-h*, *s*; 2-2½); Nymphæa Devoniensis (*st aq*, *ro-r*); N. Lotus dentata (*st aq*); Oncidium Cebolleta (*st*, *y-r*, spotted); Oxalis Bowiei (*c-h*, *pi-r*; ½-¾); O. hirta (*c-h*, *d*, varying to

Red (Tender Perennials)—*continued.*

pa v; ¼); O. lasiandra (*c-h, cr*; ¾-1½); O. variabilis rubra (*c-h*; ¼); Pelargonium varieties (*c-h*); Phormium tenax (*c-h, r* or *y*; 6) and vars.; Pinguicula caudata (*c-h, ca*); Pitcairnia corallina (*st*, petals edged *w*); P. fulgens (*st*; 3); P. Karwinskiana (*st*; 1-2); P. muscosa (*st*; 1); P. pungens (*st*; 1-1½); P. tabulæformis (*st*); Plumbago rosea (*st, pi-s*; 2); Pterodiscus speciosus (*c-h, l* or *r*; 2); Renanthera coccinea (*i-h, bd*); Salvia coccinea (*c-h, s*; 2); S. gesneræflora (*c-h, s*; 2); Scutellaria costaricana (*st, y-s*, lip *y* within; ½-1½); S. Lehmanni (*st, s*; 1-2); S. Mociniana (*st, s*, lip *y* within; 1½); S. splendens (*st, s*; 1); Selenipedium Sedeni (*i-h, cr, p-cr*, and *w*; 1½); Sinningia speciosa vars. (*st*); Siphocampylos betulæfolius (*st*; 3); S. coccineus (*st, s*; 3); S. Humboldtianus (*st, s*; 3); Sophronitis grandiflora (*c-h, s* or *cin*); S. militaris (*c-h, cin* or *cr*, lip *y* and *r*; ½); Sparaxis tricolor grandiflora (*c-h, cr*, 1-2); Spigelia splendens (*st, s*; 1½); Spiranthes colorans (*i-h, s*; 2); Sprekelia formosissima (*c-h, cr* or *w*; 2); Stachys coccinea (*c-h, s*; 1-2); Stenomesson coccineum (*i-h, cr*; 1); S. incarnata (*i-h*; 2); Swainsona galegifolia (*c-h, d*; 1); Thunbergia coccinea (*st*, varying to *o-pi*); Trichopilia crispa (*i-h, cr*, edged *w*); Tritonia croco-miflora (*c-h, o-s*); T. miniata (*c-h, s*; ¾-1); Tropæolum Jarrattii (*c-h, o-s*, dotted *y*); Vallota purpurea (*c-h*; 2-3); V. p. eximia (*c-h*, throat *w*; 2-3); Watsonia densiflora (*c-h, pi-r*; 1½-2); W. Meriana (*c-h, s* or *p*; ¾-2).

VIOLET.—*See* **Purple and Violet.**

WHITE.—The ivory shade is indicated by the abbreviation *iv*; *d* and *pa* refer to dark and pale markings.

Hardy. Annuals.—Agrostemma coeli-rosa (*w* or *pi*; 1); Argemone albiflora (1); A. hirsuta (2); Bellium bellidioides (¼); Blumenbachia insignis (scales *r-y*; 1); Borago officinalis (*w, b*, or *p*; 1-2); Centranthus macrosiphon var. (2); Clarkia elegans vars. (2); C. pulchella vars. (1½-2); Delphinium Ajacis (*w, r*, or *b*; 1-1½); Gilia liniflora (1); G. tricolor vars. (1); Heliotropium convolvulaceum (*sc*; 2); Iberis coronaria (1); Iolopsidium acaule (*w* tinged *v*, or *l*; ¼); Loasa vulcanica (2); Malcolmia maritima vars. (½-1); Malope trifida (*w* or *p*; 1); Matricaria inodora flore-pleno; Nemophila maculata (blotched *v-p*; ½); N. Menziesii alba (*bk* centre; ¼); Nigella damascena (*w* or *b*; 1-2); Papaver somniferum vars. (3-4); Polygonum orientale (*w* or *pi-p*; 3-10); Sabbatia calycosa (*s-aq*; ½-1½); Scabiosa atropurpurea vars. (*sc*; 2-3); Tropæolum majus vars. (*c*).

Biennials.—Androsace coronopifolia (½); Blumenbachia coronaria (1½); Digitalis purpurea (varying to *p*; 3-5); Eschscholtzia californica crocea vars. (1); Hesperis grandiflora vars. (4); H. tristis vars. (*w* or *c*, *sc*; 1-2); Michauxia lævigata (11).

Perennials.—Abronia fragrans (*sc*; 1-2); Acanthus mollis (*w* or *pi*; 3-4); Achillea Ageratum (2); A. atrata (2); A. Clavennæ (¾); A. Herba-rota (½); A. moschata (½); A. pectinata (1½); A. Ptarmica flore-pleno (1-2); A. serrata (1¼); A. umbellata (½-½); Aciphylla Colensoi (6-9); A. squarrosa (6-9); Acis autumnalis (*pi* base; ½); A. grandiflorus (½); A. trichophyllus (flushed *r*; ½); Aconitum album (½); A. barbatum (*c*; 2-6); A. Halleri bicolor (variegated *b*; 4-6); A. ochroleucum (*c*; 2-4); A. variegatum albiflorum (1-6); A. v. bicolor (edged *b* or *l*; 5); Actæa alba (1-1½); A. spicata (*w* or *b*; 1) and var.; Agrostemma coronaria (*r* eye; 1-2); Aletris farinosa (1½-2); Alisma natans (*s-aq*; 1-2); Allium neapolitanum (1¼-1½); A. nigrum (*w* or *c*; 2½-3½); **A. reticulatum attenuifolium** (¼-1¼); Anemone alpina (variable; ½); **A. baldensis** (variable; ½); **A. decapetala** (*c* or *y*; 1); A. dichotoma (tinged *r* beneath; 1½); **A. Hepatica** alba; ½); A. japonica alba (2-3); A. narcissiflora (*c*; 1); A. nemorosa (½); A. n. bracteata flore-pleno (½); A. n. flore-pleno (½); A. palmata var. (½); A. patens Nuttalliana (*c* or *p*; 1); A. rivularis (*s-aq*, *p* anthers; 1-2); A. stellata (*w*, *pi-r*, or *p*; ¾); A. sylvestris (*sc*; ½-1½); A. vernalis (*p* outside; ½); Antennaria margaritacea (2); Anthemis

White (Hardy Perennials)—*continued.*

Aizoon (¼); Anthericum Liliago (1-1½); A. Liliastrum (1-2); A. ramosum (2); Aponogeton distachyon (*aq.* anthers *p-br, sc*); Aquilegia cærulea alba (½-1½); A. fragrans (*w* or *pa r*; 1½-2); Arabis albida (½-¾); A. alpina (½); A. lucida (½); A. petræa (½); Arenaria balearica (½); A. graminifolia (½-¾); A. grandiflora (½-¾); A. laricifolia (½); A. rotundifolia (½); Armeria vulgaris alba (½-1); Arum tenuifolium (1); Asclepias quadrifolia (*sc*; 1); Asperula odorata (½-1); Asphodelus albus (2); Aster acuminatus (2); A. alpinus albus (½-¾); A. dracunculoides (3); A. dumosus (2); A. d. albus (2); A. ericoides (3); A. hyssopifolius (*w*, or shaded *p*; 1½-2); A. longifolius (3); A. multiflorus (3); A. Tradescanti (3); Astilbe rivularis (*y-w* or *r*; 3); Astragalus hypoglottis alba (½); Astrantia carniolica (½-1); Baptisia alba (2); Bellevalia romana (½); B. syriaca (1); Bellidiastrum Michelii (1); Bellis perennis (½); Brodiæa congesta alba (1); B. lactea (midribs *y*; 1-2); Cacalia suaveolens (3-5); C. tuberosa (2-6); Caltha leptosepala (*s-aq*; 1); Camassia esculenta Leichtlinii (*c*; 2); Campanula barbata alba (½-1½); C. bononiensis var. (2-3); C. cæspitosa alba (½-½); C. glomerata var. (1-2); C. grandis alba (1-2); C. isophylla alba; C. lactiflora (*c* tinged *b*, or *b*; 2-6); C. nitida (*w* or *b*; ½-¾); C. nobilis var. (2); C. persicifolia alba (1-3); C. p. a. coronata (1-3); C. pusilla alba (½-¾); C. pyramidalis vars. (4-5); C. Rapunculus (*w* or *b*; 2-3); C. rotunditolia alba (½-1); C. r. Hostii var. (½-1); C. speciosa (*w*, *b*, or *p*; 1-1½); C. Trachelium vars. (2-3); Cardamine asarifolia (1-1½); **C. rhomboidea**; **C. trifolia** (½); **Carlina** acanthifolia (2); Cephalanthera grandiflora (lip tipped *y*; 1-2); Cerastium alpinum (½); C. Biebersteinii (½); C. Boissieri (½-1); C. grandiflorum (½); C. tomentosum (½); Chaptolia tomentosa (½); Chelone obliqua alba (2-3); Chlorogalum pomeridianum (veined *p*; 2); Chrysanthemum argenteum (1); C. varieties; Cimicifuga americana (2-5); C. japonica (3); C. racemosa (3-5); Clematis recta (*sc*; 2-3); Clintonia uniflora (½); Convolvulus Scammonia (*w* or *r*); Coptis occidentalis (*s-aq*; ½-1); C. trifolia (*s-aq*; ½-1); Corydalis cava albiflora (½); Crambe cordifolia (*sc*; 6); C. capense (*r* at back; 1); Crocus biflorus (varying to *l*; ½); C. Boryi (*c*, throat *o*; ¼); C. vernus (*w*, *b*, or *v*; ½); C. varieties; Dahlia varieties; Delphinium exaltatum (*w* or *b*; 3-6); D. grandiflorum album (1-2); D. g. album-plenum (1-2); Dentaria diphylla (*p* outside; ½-1); D. polyphylla (*w*; 1); Dianthus arenarius (2); D. barbatus vars. (1-1½); D. Caryophyllus vars. (*sc*; 1½-2); D. plumarius (variable, *w*; ½-1); Diapensia lapponica (½); Dicentra spectabilis vars. (1½-2); Dictamnus albus (1-1½); Diphylleia cymosa (1); Dodecatheon Meadia (*w*, *pa-p*, or *l*; ¾-1½); Draba Mawii (½); D. nivalis (½); Dracocephalum Ruyschianum japonicum (bordered *b*; 2); Drypis spinosa (*w* or *pa pa*; 1); Epilobium hirsutum (*w* or *pa pa*; 3-5); Epimedium macranthum (½-1½); E. Musschianum (1); Eremurus himalaicus (1½-2); Erigeron grandiflorus (*w* or *p*; ½-1); Erodium pelargoniiflorum (spotted *p*; ½); Erythronium dens-canis (*w* or *p*; *r*; ½); Fragaria chilensis (1); F. c. grandifera (1); Fritillaria Meleagris var. (1); Funkia ovata (*w* or *b-l*; 1-1½); F. subcordata (1½-2); Galanthus Elwesii (spotted *g*; ½-1); G. nivalis (marked *g*; ½); G. plicatus (*g-w*; ½); Galax aphylla (½-1); Galega officinalis albiflora (2-3); Galtonia candicans (4); Gaura Lindheimeri (*p-c*; 4); Gentiana Pneumonanthe vars. (½-1); Geum triflorum (edged *p*; ½-1); Gilliesia trifoliata (varying to *r*; 1½); Gratiola officinalis (striated *p*; 1); Gymnogramma argentea (1-2); Gypsophila cerastioides (veined *r*; 2½); G. paniculata (2-3); Habenaria blephariglottis; Hesperis matronalis vars. (*sc*; 2-3); Heteropappus hispidus (1); Houstonia serpyllifolia (½); Hyacinthus varieties (*w*; ½-1); Ibecris sempervirens (*w*; 1-2); I. Tenoreana (*w* or *p*; ½); Ipomœa pandurata (throat *p*); Iris florentina (tinged *l*; *w*; 2-3); I. Guldenstadtiana (marked *g*; 2); Lapeyrousia thalictroides (½-1½); Lathyrus sylvestris platyphyllus var.; Leucoium æstivum (tipped *g*; 1½); L. Hernandezii (spotted *g*; 1-1½); L. vernum (spotted *g*; 1-1½); Linum

White (Hardy Perennials)—*continued.*

auratum (banded *y*, spotted *p*; 2-4); L. candidum (2-3); L. Krameri (tinged *r*, *sc*; 3-4); L. longiflorum (*sc*; 1-2); L. l. eximium (1-2); L. neilgherrense (*sc*; 2-3); L. speciosum (*w*, or marked *r*; 1-3); L. s. albiflorum (1-3); L. Washingtonianum (tinged *p* or *l*; 3-5); Lychnis chalcedonica var. (1½-3½); L. fulgens Haageana (varying to *r*; ½-1); L. vespertina (*sc*; 1-3); Lysimachia barystachys; L. clethroides (3); Malva moschata var. (2-2½); Mandragora vernalis (*w* or *b*; 1); Marshallia cæpitosa (*b-w*; 1); Melittis Melissophyllum (*c*, spotted *pi* or *p*; 1-1½); M. M. grandiflora (*c*, lower lip *p-r*; 1-1½); Mertensia sibirica var. (½-1½); Milla biflora (½); Mitchella repens (tinged *p*); Mœhringia muscosa (¼); Muscari botryoides alba; (½-1); Myrrhis odorata (2-3); Narcissus biflorus (crown *y*; 1); N. Bulbocodium monophyllus (¼-¾); N. calathinus (*w* or *pa y*; ¾-1); N. Macleai (*c*, crown *y*; 1); N. poeticus (crown edged *r*, *sc*; 1 or more); N. Tazetta (crown *y*, *sc*); N. T. papyraceus (tube *g-w*); N. triandrus (½-1); N. varieties; Nierembergia rivularis (tinged *y* or *pi*); Nothoscordum fragrans (barred *l*, *sc*; 1½-2); Nymphæa alba (*aq*); N. odorata (*aq*, tinged *r*, *sc*) and var.; N. pygmæa (*aq*, *sc*); Œnothera acaulis (fading to *r*; ½); Œ. californica (varying to *pi*, *y* centre, *sc*; 2); Œ. eximia (¾-1); Œ. taraxacifolia (fading to *r*; ½); Ornithogalum narbonense (1-1½); O. nutans (*g* at back; ¾-1); O. pyramidale (striped *g* at back; 1½-2); O. umbellatum (marked *g* outside; ½-1); Oxalis Acetosella (veined *p*; ¼); Pæonia albiflora (*w* or *pi*; 2-3); P. Emodi (2-3); P. varieties (*sc*); Pancratium illyricum (*sc*; 1½); Papaver alpinum (*w*, *pi*, or *y*; ½); P. nudicaule (*w*, *o*, or *y*; ¾-1½); Pedicularis verticillata (*w* or *pi*; ½-1); Peltaria alliacea (1); Pentstemon gracilis (*w* or *li-p*; 1); P. varieties; Petalostemon candidus (1); Petasites fragrans (*sc*; ½); P. frigida (½); Phlox amœna (*w*, *p*, or *pi*; ½-1¼); P. maculata candida (2); P. paniculata (varying to *pi-p*; 3-4); P. pilosa vars. (1-2); P. subulata vars.; P. varieties; Physalis Alkekengi (anthers *y*, calyx *r*; 1); Podophyllum Emodi (½-1); Polemonium cæruleum var. (2); P. reptans (*w* or *b*; ½); Polygonatum multiflorum (2-3); Polygonum amplexicaule *w* or *pi-r*; 2-3); P. compactum (2); P. cuspidatum (4-8); Potentilla congesta (1-2); P. unguiculata (¾-1); Pratia angulata; P. repens (tinted *v*); Primula involucrata (*s-aq*, *c*, *y* eye; ½); P. i. Munroi (*y* eye; ½-¾); P. japonica vars. (1-1½); P. minima (*w* or *pi*; ½); P. nivalis (¼-¾); P. sinensis (*w* or *pa l*; ¾); Puschkinia scilloides (striped *b*; ¼-¾); Pyrethrum corymbosum (1); P. Tchihatchewii (disk *y*; 2); P. uliginosum (disk *y*; 5); Pyrola rotundifolia (*sc*, ½) and var.; P. secunda (*g-w*; ¼-½); Ramondia pyrenaica var. (¼); Ranunculus aconitifolius (½-2) and vars.; R. amplexicaulis (¼-¾); R. anemonoides (tinted *pi*; ¼-½); R. parnassifolius (*w* or *p*; ¼-½); Romanzoffia sitchensis (¼); Sagittaria heterophylla (*s-aq*; 2); S. sagittifolia (*s-aq*, claws *p*); Salvia asperata (2); S. Sclarea (*b-w*; 2-3); Sanguinaria canadensis (½); Saponaria officinalis (*w* or *l*; 1-3); Saxifraga Burseriana (*c*; ½); S. B. major (½); S. cæsia (*c*; ½-¼); S. cæspitosa (¼); S. Camposii (¼-½); S. Cotyledon (1-2); S. granulata (½-1½); S. Hostii (sometimes dotted *p*; ½-1); S. hypnoides; S. lingulata (dotted *pi*; 1-1½); S. l. cochlearis (1-1½); S. longifolia (slightly dotted *r*; 1); S. Maweana (¼-½); S. Rocheliana coriophylla (¼); S. Stracheyi alba (¼-¾); S. umbrosa (sometimes sprinkled *r*; ½-1); S. valdensis (¼); S. virginiensis (¼-¾); Scilla amœna (*w* or *b*; ½-¾); S. bifolia (*w*, *b*, or *r*; ½); S. hispanica alba (¾-1); S. nutans vars.; S. peruviana alba (1-1½); Sedum album (¼); S. anglicum (*w* or tinted *pi*; ½); S. brevifolium (ribbed *pi*; ¼); S. glaucum (*pi-w*; ¼); S. maximum (tipped *r*; 1-2); S. m. hæmatodes (tipped *r*, 2 2½); Sida Napæa (4-10); Silene acaulis alba (½); S. alpestris (½); S. maritima and var.; Sisyrinchium grandiflorum var. (¾); Smilacina oleracea (tinged *pi* outside; 4); S. stellata (1-2); Spiræa Filipendula (*w* or *pi* outside; 2-3); S. Ulmaria (2-4); Thalictrum aquilegifolium (stamens sometimes *p*; 1-3); T. tuberosum (1); Tiarella cordifolia

White (Hardy Perennials)—*continued.*

(½-1); Tradescantia virginica (*w*, *v*, or *p*; ½-2); Trifolium Lupinaster albiflorum (1-1½); Trillium erythrocarpum (striped *p* at base; 1); T. grandiflorum (changing to *pi*; 1-1½); T. nivale (2-4); Veratrum album (3-4); Veronica virginica (*w* or *b*; 2-6); Vinca minor vars.; Viola odorata vars. (*sc*); V. pedata (*w* or *b*); V. tricolor vars.; Xerophyllum asphodeloides (1-2); Yucca filamentosa flaccida (4-8); Y. f. orchioides (2-2½); Zephyranthes Atamasco (½-1); Zygadenus glaberrimus (2-3).

Half-hardy.—ANNUALS.—Acroclinium roseum album (1-2); Ageratum mexicanum var. (2); Ammobium alatum grandiflorum (1½-2); Brachycome iberidifolia (*w* or *b*; 1); Callistephus chinensis vars. (½-2); Datura fastuosa (*v* outside; 2-3); D. Metel (*sc*; 2); Gomphrena globosa alba (1½); Helichrysum bracteatum niveum (*w* and *y*; 3-4); Mentzelia ornata (*sc*; 2); Mesembryanthemum crystallinum; Mimulus Jalapa (*w*, *y*, or *r*; 2); Nicotiana affinis (*sc*; 2-3); Phlox Drummondii vars. (1); Schizanthus candidus (2); Schizopetalon Walkeri (1-2); Swertia paniculata (marked *p* or *g* at base; 1); Verbena varieties (*sc*); Zaluzianskia capensis (½-1); Zinnia elegans vars (2).

PERENNIALS.—Ainsliæa Walkeræ (anthers *r-p*; 1); Amaryllis Belladonna (*w* or *p*, &c.; 2); Astilbe japonica (1-2); A. j. variegata (1-2); Bellis rotundifolia cærulescens (*w* or *pa b*); Boussingaultia baselloides (turning *bk*); Chionographis japonica (½-1); Commelina cœlestis alba (1½); Conandron ramondioides (*w*, or *pi* and *p*; ½); Erodium Reichardi (veined *pi*; ¼); Francoa ramosa (2-3); Gladiolus blandus (marked *r*; ½-2); G. Colvillei alba (1½); G. varieties (1-3); Lilium giganteum (tinged *g* and *p*; 4-10); Nolina georgiana (2-3); Ophiopogon japonicus (½); O. j. argenteo-marginatus (1½); Ornithogalum arabicum (*bk* centre, *sc*; 1-2); Pancratium maritimum (2); Petunia varieties (marked *r*, *p*, &c.); Salvia patens alba (2½); Saxifraga Fortunei (½); S. sarmentosa (¾); Sisyrinchium filifolium (lined *pa p-r*; ½-¾); S. iridifolium (*y-w*; ½-1); Tigridia pavonia albiflora (1-2); Tricyrtis hirta (outer segments dotted *p*; 1-3); Urginea maritima (keeled *p-g*; 1-4); Viola hederacea (*w* or *b*); Yucca glauca (5-6).

Tender.—ANNUALS.—Begonia humilis (*i-h*; ½); Browallia elata var. (*c-h*; 1½); B. grandiflora (*c-h*, *w* or *l*; 1-3); Celosia argentea (*st*; 1); Drosera rotundifolia (*c-h*; ¼); Nicotiana acutiflora (*c-h*; 1-2); Porana racemosa (*c-h*); Solanum sisymbriifolium (*c-h*, *w* or *pa b*; 4); Thunbergia alata alba (*st*); Victoria regia (*st aq*, *p* or *pi* towards the centre); Waitzia nivea (*c-h*, *w*, *pi*, or *pa y*; 1½).

BIENNIAL.—Basella alba (*st*; ¾).

PERENNIALS.—Actinocarpus minor (*c-h aq*); Actinotus helianthi (*c-h*; 2); Aerides crispum (*st*, suffused *p-pi*; 1); A. c. Warneri (*st*, lip *pi*); A. falcatum (*st*, marked *r* and *pi*); A. Fieldingii (*st*, mottled *pi*; 3-4); A. japonicum (*st*, marked *br-p* and *v*); A. maculosum Schrœderi (*st*, marked *l* and *pi*; 1½); A. mitratum (*st*, lip *v*); A. odoratum (*st*, *c*, marked *pi*, *sc*; 1½) and vars.; A. quinquevulnerum (*st*, marked *r* and *pi*, *sc*; ½); A. q. Farmeri (*st*, *sc*); A. Williamsii (*st*, *pi-w*); Aganisia fimbriata (*st*, lip *b*); A. pulchella (*st*, *y* blotch; ¾); Agapanthus umbellatus albidus (*c-h*; 2-3); A. u. maximus var. (*c-h*; 2-3); Aglaonema commutatum (*st*; 1); A. Mannii (*st*; 1½); Albuca fastigiata (*c-h*; 1½); A. Nelsoni (*c-h*, striped *r*; 4-5); Alocasia scabriuscula (*st*; 4-4½); Alpinia mutica (*st*, lip *y* and *r*; 5); Alströmeria Pelegrina alba (*c-h*; 1); Amomum Granum Paradisi (*st*, tinged *y* and *pi*; 3); Angræcum arcuatum (*st*; ½); A. bilobum (*st*, tinged *pi*, *sc*; ½); A. Chailluanum (*st*, spur *y-g*); A. citratum (*st*, *c* or *y*); A. eburneum (*st*, *w*); A. Ellisii (*st*, spur *br*, *sc*; 1); A. falcatum (*c-h*, *sc*; ½); A. Kotschyi (*st*, *y-w*, *sc*); A. modestum (*st*); A. pellucidum (*st*; ½); A. pertusum (*st*, ¾); A. Scottianum (*st*, spur *y*); A. sesquipedale (*st*; 1); Anguloa eburnea (*c-h*, lip spotted *pi*); A. uniflora (*c-h*, spotted *pi*, sometimes freckled *br*; 1½); Anthurium Harrisii pulchrum (*st*, spadix *r*; 3); A. Lindenianum (*st*, spadix *w* or *p*, *sc*; 3); A. ornatum

White (Tender Perennials)—*continued.*

(*st*, spadix *p*; 2½); A. Scherzerianum Williamsii (*st*, spadix *y*; 1-1½); Arthropodium neo-caledonicum (*c-h*; 1½); A. paniculatum (*c-h*; 3); A. pendulum (*c-h*; 1½); Arundo conspicua (*c-h*; 3-12); A. Donax (*c-h*, at first *r*; 12); Begonia amabilis (*i-h*, *w* or *pi*); B. Dregii (*i-h*; 1); B. echinosepala (*i-h*; 1½); B. glandulosa (*i-h*, *g-w*; 2); B. herbacea (*i-h*; ½); B. hydrocotylifolia asarifolia (*i-h*); B. imperialis (*i-h*; ½); B. laciniata (*i-h*, tinted *pi*, 2); B. monoptera (*i-h*; 2½); B. octopetala (*i-h*, *g-w*; 2); B. pruinata (*i-h*); B. Richardsiana (*i-h*; 1); B. scandens (*i-h*); B. Schmidtiana (*i-h*; 1); B. semperflorens (*i-h*, *w* or *pi*; 2); B. varieties (*i-h*); Bonatea speciosa (*st*; 2); Brassavola Digbyana (*i-h*, *c*, lip streaked *p*; ¾); B. Gibbsiana (*i-h*, spotted *br*); B. lineata (*i-h*, *c* and *w*, *sc*; 1); B. venosa (*i-h*, *c* and *w*; 1); Bromheadia palustris (*st*, marked *p* and *y*; 2); Bulbophyllum reticulatum (*st*, *w*, marked *p*); Burlingtonia Batemanni (*st*, *w*, lip *mv*, *sc*); B. candida (*st*, stained *y*, *sc*; 1); B. decora (*st*, *w* or *pi*, spotted *r*); B. fragrans (*st*, stained *y*, *sc*); B. venusta (*st*, *w*, tinted *pi* and *y*); Calanthe veratrifolia (*st*, tipped *g*; 2); C. vestita (*st*; 2½) and vars.; Caliphruria Hartwegiana (*c-h*, *g-w*; 1); C. subedentata (*c-h*; 1½); Calochortus albus (*c-h*, blotched; 1-1½); C. elegans (*c-h*, *g-w*, *p* at base; ¾); C. Nuttallii (*c-h*, spotted *p*; ½) C. venustus (*c-h*, marked *y* and *p*; 1½); Carpolysa spiralis (*c-h*, *r* outside; ½); Cattleya chocoensis (*i-h*, lip *w* and *p*); C. crispa (*i-h*, lip *r*); C. Devoniana (*i-h*, tinged *pi*, lip *pi-p*); C. Dominiana (*i-h*, shaded *pi*, lip *pi-p*, *w*, and *o*); C. D. alba (*i-h*, lip blotched *l*); C. labiata picta (*i-h*, lip *r*; 1); C. Mendelli (*i-h*, varying to *pi*, lip *m*); C. Trianæ Hilli (*i-h*, lip *m*, throat *y*); C. Wageneri (*i-h*, lip stained *y*); Centrosolenia picta (*st*; 1); Ceropegia Gardnerii (*c-h*, *c*, blotched *p*); Cheirostylis marmorata (*st*, calyx *r*); Chysis bractescens (*st*, lip blotched *y*); Cineraria varieties (*c-h*); Cœlia Baueriana (*i-h*, *sc*; 1); Cœlogyne asperata (*i-h*, *c*, marked *y* and *br*; 2); C. barbata (*i-h*, lip marked *p-br*; ½); C. corrugata (*c-h*, lip *y* and *o*); C. cristata (*i-h*, lip blotched *y*, *sc*); C. Cumingii (*i-h* lip *y*; 2); C. flaccida (*i-h*, lip marked *y* and *r*, *sc*; 1); C. Gardneriana (*i-h*, lip *y* at base; 1); C. Gowerii (*c-h*); C. humilis (*i-h*, tinged *pi*, marked *r* and *br*); C. maculata (*i-h*, lip barred *r*); C. media (*i-h*, *c*, lip *y* and *br*; 1); C. ocellata (*i-h*; lip marked *y*; 1); C. odoratissima (*c-h*, lip stained *y*, *sc*); C. Rhodeana (*st*, *w*, *sc*); C. viscosa (*i-h*, lip streaked *br*); Colocasia esculenta (*c-h*; 2); C. odorata (*st*, *sc*; 2); Crassula marginalis (*c-h*); C. rosularis (*c-h*); Crinum asiaticum (*c-h*, tube *g*; 2-2½); C. Balfourii (*st*, tube *g*, *sc*; 1½); C. Careyanum (*st*, tinged *r*; 1); C. giganteum (*st*, *sc*; 2-3); C. Kirkii (*st*, striped *r* at back; 1-1½); C. Macowani (*c-h*, tinged *p*; 2-3); C. purpurascens (*st*, tinged *r* outside; 1-3); Curcuma albiflora (*st*, *w* and *y*; 2); Cyanella odoratissima alba (*c-h*, *sc*; 1); Cyclamen africanum (*c-h*, *w* or tinted *r*, spotted *p*; ¼-½); C. cilicicum (*c-h*, base *p*; ¼); C. neapolitanum (*c-h*, *w* or *r*, *v-p* spot; ¼); C. persicum (*c-h*, blotched *p*; ½); C. varieties (*c-h*); Cycnoches barbatum (*st*, *g-w*, spotted *pi*); Cymbidium Dayanum (*st*, *y-w*, marked *p*); C. eburneum (*i-h*, *iv*, stained *y*, *sc*; 1); C. Mastersii (*i-h*, *iv*, stained *pi*, *sc*); C. Parishii (*st*, *iv*, lip variegated); Cypripedium concolor (*st*, *c*); C. niveum (*st*, freckled *br*; ½); Dahlia imperialis (*c-h*, marked *l* and *r*; 10-12); Dendrobium Ainsworthii (*st*, tinged *pi* and *r-p*, *sc*; 1-2½); D. aqueum (*st*, *c*, lip blotched *y*; 1); D. Bensoniæ (*c-h*, lip marked *o* and *bk*; 1); D. bigibbum candidum (*c-h*; 1); D. Boxallii (*st*, 1-1½); D. bigibbum candidum (*c-h*; 1); D. Boxallii (*st*, marked *p* and *y*); D. curviferum (*st*, *w*, *y*, and *r*; 1); D. Devonianum (*st*, marked *pi*, *p*, and *o*) and vars.; D. Draconis (*st*, lip *r* at base; 1-1½); D. endocharis (*st*, lip lined *br*; 1); D. Falconeri (*st*, marked *p*, margined *o*; 1); D. formosum (*st*, throat *o*; 1-1½); D. Fytchianum (*st*, lip *w* and *p-pi*; 1); D. gratiosissimum (*st*, *w*, *pi*, and *y*); D. infundibulum (*st*, *iv*, lip *y*; 1-1½); D. Leechianum (*c-h*, *w* and *pi-p*); D. longicornu majus (*st*, lip marked *y*; 1½); D. moniliforme (*c-h*, lip spotted *p*, *sc*; ¾); D. nobile (*c-h*, marked *pi* and *r*; 2-3); D. Pierardii (*c-h*, *c* or *pi*, lip *y* and *p*); D. scabrilingue (*st*, lip *g*, *y*, and *o*; ½-¾); D. speciosum (*c-h*, *c* or *y-w*; ½-¾); D. teretifolium (lip speckled *bk*); D. transparens (*st*, *w*, marked *p-pi*, *r*, and *y*; 1-1½); D. Wardianum album (*st*, lip *o* at base); D. xanthophlebium (*st*, lip spotted *o*; 1); Dionæa muscipula (*c-h*; ½-¾); Disa megaceras (*c-h*, blotched *pa p* inside; 1-2); Drimiopsis Kirkii (*c-h*; ¾); Drosera binata (*c-h*; ½); Elisena longipetala (*c-h*; 3); Epidendrum bicornutum (*st*, lip spotted *r*; 1-1½); Episcia villosa (*st*, marked *p* within; 1-1½); Eucharis candida (*st*; 2); E. grandiflora (*st*; 2); E. Sanderiana (*st*; 1½); Eurycles Cunninghamii (*i-h*; 1); Freesia refracta (*c-h*); F. r. alba (*c-h*); Galeandra Devoniana (*st*, lip pencilled *pi*; 2); Gladiolus varieties (*c-h*; 1-3); Gloxinia varieties (*st*); Gongora maculata grandiflora (*st*, spotted *pi*; 1½); Guzmannia erythrolepis (*st*, bracts *p-r*; 1-2); G. tricolor (*st*, bracts *y*, *b-p*, and *r*; 1-2); Gymnostachyum ceylanicum (*st*, tipped *g* and *y*); Hechtea argentea (*c-h*); Hedychium coronarium (*st s-aq*, *sc*; 5); Helleborus niger (*c-h*; ½-1½); Hippeastrum vittata (*c-h*, striped *r*); Hyacinthus varieties (*c-h*, *sc*; ¾-1); Hymenocallis amœna (*st*, tube *g-w*, *sc*; 1-2); H. calathinum (*c-h*, tube *g*, *sc*); H. macrostephana (*st*, tube *g*, *sc*; 2); H. speciosa (*st*, *sc*; 1½-2); Impatiens Hookeriana (*st*, striped *p*; 2½); Ixia hybrida (*c-h*; 1); Lælia albida (*i-h*, *c*, lip *w* or *pi*, lined *y*, *sc*); L. anceps alba (*i-h*, lip streaked *y*, *sc*); L. a. Dawsoni (*i-h*, lip marked *p* and *y*, *sc*); L. elegans alba (*i-h*, marked *r-m*); L. majalis var. (*i-h*); L. Wyattiana (*st*, *w*, *p*, and *y*); Lycaste jugosa (*i-h*, lip veined *p*); Masdevallia chelsoni (*c-h*, lip marked *mv*); M. melanopus (*c-h*, dotted *p*, tails *y*); M. tovarensis (*c-h*; ½); Maxillaria grandiflora (*i-h*, lip marked *y* and *r*; ¼-½); M. luteo-alba (*i-h*, *c*; 1½); M. splendens (*i-h*, lip *o* and *pi*); M. venusta (*i-h*, lip marked *y* and *r*); Miltonia Phalænopsis (*i-h*, lip marked *r* and *y*; ½-¾); Morœa tricuspis (*g-w*; 1); Nelumbium speciosum (*c-h aq*, tipped *pi*, *sc*); Nymphæa Lotus (*st aq*, *w* or *r*); N. thermalis (*st aq*); Odontoglossum cirrhosum (*i-h*, spotted *p*, &c.); O. citrosmum (*i-h*, lip *p*, *sc*); O. crispum (*c-h*, lip *y*, spotted *r-br*) and vars.; O. Oërstedii (*c-h*, marked *y* and *r*); O. Pescatorei (*c-h*, lip marked *p-r* and *y*); O. pulchellum (*i-h*, lip dotted *p*, *sc*); O. Rossii Ehrenbergii (*c-h*, petals barred *br*); Oncidium incurvum (*c-h*, marked *r* and *br*, *sc*; 3); Oxalis variabilis albiflora (*c-h*; ½); Pachystoma Thomsoniana (*st*, lip *p*; ½); Pelargonium pulchellum (*c-h*, spotted *r*); P. varieties (*c-h*); Peristeria elata (*st*, speckled *l*, *sc*; 4); Phaius albus (*i-h*, lip marked *y* and *pi*; 2); P. Dodgsonii (*i-h*, lip *r* at base); P. irroratus (*i-h*, *c*, tipped *pi*); P. Marshalliæ (*i-h*, lip marked *y*; 2); P. tuberculosus (*i-h*, lip marked *y*, *br*, and *mv*); Phalænopsis amabilis (*st*, lip streaked *y*) and var.; P. amethystina (*st*, lip marked *y*, *b*, and *p*); P. Aphrodite (*st*, lip sometimes streaked *r*, *o*, and *y*); P. Parishii (*st*, *c*, lip *p*); P. P. Lobbii (*st*, *c*, lip banded *br*); P. speciosa (*st*, lip *pi-p*, spotted *y*); P. Stuartiana (*st*, *c*, marked *br*); Plagiolirion Horsmanni (*st*); Podolepis gracilis (*c-h*, *w*, *p*, or *l*; 3); Ranunculus Lyalli (*c-h*; 2-4); Richardia africana (*c-h*, spadix *y*; 2); R. albo-maculata (*c-h*, *g-w*; 2); Romneya Coulteri (*c-h*; 2-4); Saccolabium violaceum Harrisonianum (*st*, *sc*); Sagittaria montevidensis (*i-h*, spotted *r* at base); Sarcochilus Fitzgeraldi (*c-h*, spotted *r*); Schismatoglottis crispata (*st*, *c*, *g* below); Selenipedium Lindeni (*i-h*, marked *g* and *p-r*; 1); S. Schlimii (*c-h*, marked *pi*; 1); Sinningia speciosa vars. (*st*); Siphocampylos coccineus leucostomus (*st*, *w* and *r*; 3); Solanum sisymbriifolium (*c-h*, *w* or *pa b*; 4); Sparaxis grandiflora Liliago (*c-h*; 1-2); S. varieties (*c-h*); Spathiphyllum candidum (*st*; ½); S. cannæfolium (*st*; 1); Sprekelia formosissima (*c-h*, *w* or *r*, 2); Strelitzia augusta (*i-h*; 10); Streptanthera elegans (*c-h*, tinged *pa pi*, marked *p* and *y*; ½); Streptocarpus parviflora (*c-h*, faintly streaked *p*; ½-¾); Theropogon pallidus (*c-h*, sometimes tinged *r*; 1); Thunbergia erecta alba (*st*, tube *y*; 6); T. fragrans (*st*, *sc*); Tillandsia pulchra (*st*, bracts *r*); T. regina (*st*, *sc*, bracts *pi*; 7); T. virginalis (*st*, *w*); T. xiphioides (*st*); Trichopilia nobilis (*i-h*, lip blotched *o*, *sc*);

White (Tender Perennials)—*continued.*

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T. suavis (*i-h, w* or *c*, lip marked *v-pi* and *y, sc*); Utricularia montana (*st*, marked *y*); Vanda Hookeriana (*st*, marked *pi, m*, and *p*); Xanthorrhœa Preissii (*c-h*; 5-6); Xanthosia rotundifolia (*c-h*; 1-2); Yucca aloifolia (*c-h*; 15-20); Zephyranthes candida (*c-h, g* at base; ¼-¾); Zygopetalum candidum (*st*, lip *pi-p* and *w*; ¾); Z. Dayanum (*st*, marked *g* and *p-c*); Z. triumphans (*st*, marked *b*); Z. Wallisii (*c-h*, marked *v*).

YELLOW.—The shades are indicated by the following abbreviations: *bu* (buff), *chr* (chrome), *ci* (citron), *d* (dark), *go* (golden), *le* (lemon), *n* (nankeen), *o* (orange), *pa* (pale), *str* (straw), *su* (sulphur).

Hardy.—ANNUALS.—Amarantus caudatus var. (2-3); Argemone ochroleuca (*pa*; 1½); Bartonia albescens (or biennial) (*pa*; 1-4); B. aurea (*go*; 1); Bivonæa lutea (¼-½); Calendula maderensis (*o*; 2); C. officinalis (*o*; 3); Castilleja indivisa (*g-y*, bracts *r*; ½-1); Centaurea suaveolens (*sc*; 1½); Cerinthe minor (sometimes spotted *br*; 1-1½); Chlora perfoliata (*go*; 1); Chrysanthemum coronarium (4); C. segetum (1½); C. s. grandiflorum (1½); Collomia grandiflora (*r-y*; 1½-2); Coreopsis Drummondi (*r-br* circle; 1); C. tinctoria (*p-br* blotch; 2); Erysimum Perofskianum (*r-o*; 1); Gilia micrantha aurea (*go*; ¾); Helianthus annuus (6) and vars.; Limnanthes Douglasii (passing to *w*, streaked *gy*; ¾); Linaria spartea (*d*); Loasa Pentlandii (*o*; 4); L. prostrata; Lupinus luteus (*sc*; 1-1½); Madia elegans (1½); Nigella orientalis (spotted *r*; 1½); Œnothera bistorta Veitchiana (spotted *r*); Oxalis corniculata; O. valdiviensis (streaked *r*; ½-¾); Podolepis aristata (*go*, ray *pi*; 1); Selenia aurea (*g-y* and *go*; ¾); Tropæolum majus vars.; T. peregrinum; Ursinia pulchra (*o*; 1); Vesicaria grandiflora (1).

BIENNIALS.—Bartonia albescens (or annual) (*pa*; 1-4); Centaurea Fenzlii (4); Chlora grandiflora (*go*; ½-1); Eschscholtzia californica crocea (*o*; &c.; 1); Fœniculum dulce (4); Glaucium flavum (1-2); Grindelia grandiflora (*y* or *o*; 2½-3); Meconopsis nepalensis (*pa go*; 3-5); Œnothera biennis (*pa*; 2-4); Scrophularia chrysantha (*go*; ½-1½); Verbascum Chaixii (3).

PERENNIALS.—Achillea ægyptiaca (1½-2½); A. aurea (*go*; 1½); A. Eupatorium (4-5); A. tomentosa (½-1); Aconitum Anthora (*pa*; 1-2); A. A. nemorosum (3); A. pyrenaicum (2); A. vulparia (*pa*; 1-3); Acorus Calamus; Actinella grandiflora (½-¾); Actinomeris helianthoides (3); A. procera (8); A. squarrosa (3); Adonis pyrenaica (1-1½); A. vernalis (¾-1); Agrimonia odorata (*sc*; 2-3); Aletris aurea (1-2); Allium Moly (¾-1¼); Alströmeria aurantiaca (*o*, streaked *r*; 3-4); A. versicolor (marked *p*; 2-4); Alyssum alpestre (¼); A. gemonense (1); A. orientale (1); A. saxatile (1) and var.; A. serpyllifolium (*pa*; ¼); A. Wiersbeckii (*d*; 1½); Anemone alpina sulphurea (1); A. decapetala (*pa*, or *c*; 1); A. multifida (*pa*, or *r*; ½-1); A. palmata (*go*; ¾); A. patens (*y* or *p*; 1); A. ranunculoides (¼); Anthemis Biebersteinii (1-2); Anthyllis Vulneraria (variable; ½); Aquilegia chrysantha (*pa*, tipped *r-p*; 3-4); Arnebia echioides (spotted *p*; ¾-1); Arnica Chamissonis (1-2); A. foliosa (*pa*; 1-2); A. montana (1); A. scorpioides (½-1); Artemisia alpina (½-¾); A. argentea (*pa*; 1½); Asclepias tuberosa (*o*; 1-2); Asphodelus creticus (2); Astragalus alopecuroides (2-5); A. canadensis (2-3); A. galegiformis (*pa*; 3-5); A. glycyphyllos (*su*; 2-3); A. leucophyllus (*pa*; 2-3); A. maximus (2-3); A. vulpinus (*pa*; 2-3); Baptisia perfoliata (3); B. tinctoria (2-3); Brodiæa gracilis (*d*, nerved *br*; ¼); Buphthalmum grandiflorum (1½); B. salicifolium (1½); B. speciosissimum (2); Bupleurum graminifolium (*g-y*; ½); Calliprora lutea (marked *p-br*; ¾); Caltha palustris (*s-aq, go*; 1); C. radicans (*s-aq*; ½); Campanula thyrsoidea (*su*; 1-1½); Cassia marylandica (2-3); Centaurea alpina (3); C. babylonica (6-10); C. macrocephala (3); Cerinthe maculata (spotted *p*; 1-1½); Cheiranthus Cheiri vars. (*sc*; 1-2); Chrysanthemum varieties; Chrysobactron Hookeri

Yellow (Hardy Perennials)—*continued.*

(1½-3); C. Rossii (2-3); Chrysogonum virginianum (½); Cineraria aurantiaca (*o*; ½); C. longifolia (2); Cnicus spinosissimus (*pa*; 3); Colchicum luteum (¼); Coreopsis auriculata (*p-br* band; 1-1½); C. grandiflora (3-4); C. lanceolata (1-3); C. verticillata (*go*; 1-2); Coronilla iberica; Corydalis bracteata (*su*; ¾); C. lutea (1); C. Marschalliana (*su*; ¾); C. nobilis (*pa*, tipped *g*; ¾); C. sibirica (1-3); Crocus aureus (*o*; ¼); C. susianus (*o*; ¼); C. varieties; Dahlia varieties; Datisca cannabina (3-6); Dianthus Caryophyllus vars. (*sc*; 1½-2); Dicentra chrysantha (*go*; 3-5); D. thalictrifolia (*sc*); Digitalis ambigua (reticulated *br*; 2-3); Diotis maritima (½-1); Doronicum altaicum (1); D. austriacum (1-1½); D. caucasicum (1); D. Pardalianches (1½-3); D. plantagineum excelsum (5 or more); Draba aizoides (¼); D. Aizoon (¼); D. alpina (*go*; ¼); D. glacialis (*go*; ¼); Epimedium pinnatum (¾-2); Eranthis hyemalis (¼-¾); E. sibiricus (¼); Eremurus spectabilis (*su*; 1); Erigeron aurantiacus (*o*; 1); Erysimum alpinum (*su*; ½); E. ochroleucum (*pa*); E. pumilum (*pa su, sc*; ¼); Erythronium americanum (¼-½); Ferula asparagifolia (4-5); F. communis (8-12); F. glauca (6-8); F. tingitana (6-8); Fœniculum vulgare (6); Fritillaria armena (½); F. imperialis (varying to *r*; 3); F. i. lutea (3); F. i. sulphurine (*su*; 3); F. pallidiflora (¾); F. pudica (*d*; ½-¾); Gagea lutea (½); Gaillardia aristata (1½); Gentiana lutea (4-6); G. punctata (dotted *p*; 1-2); Geum elatum (*go*); G. montanum (½-1); G. pyrenaicum (1½); Gilia Brandegei (*go*; ¾-1); Gratiola aurea (*go*; ½); Habenaria aristata (*go*; 1); Hacquetia Epipactis (¼-½); Helenium autumnale (4-6); Helianthemum vulgare vars.; Helianthus orgyalis (6-10); H. rigidus (*go*; 3); Helichrysum arenarium (*go*; ½-1); Hemerocallis Dumortieri (*o*, tinged *br*; 1-1½); H. flava (*o, sc*, 2-3); H. fulva (2-4); H. Middendorfi (2-3); H. minor (tinged *g*; ½-¾); Humulus Lupulus (*g-y*); Hyacinthus varieties (*sc*; ¾-1); Hypericum elegans (1); H. patulum (6); H. perforatum (1-3); Inula glandulosa (2); I. Hookeri (*pa, sc*; 1-2); Iris aurea (3-4); I. Chamæiris (marked *br*; ¼-½); I. flavescens (*le*, marked *p-br* and *o*, 2-3); I. lutescens (*pa*; ½); I. Monnieri (*le, sc*; 3-4); I. ochroleuca (*y* and *w*; 3); I. Pseudo-acorus (*s-aq*; 2-3); Leptinella dioica (*pa*; ¼); Lilium canadense (spotted, varying to *r*; 1½-3); L. chalcedonicum (*y* or *r*; 2-3); L. croceum (*go*, tinted *r*; 3-6); L. Hansoni (*r-o*; 3-4); L. monadelphum (*pa*, tinged *r* at base; 3-5); L. Parryi (*pa*, dotted *br-r*; *sc*; 2-6); L. pyrenaicum (2-4); Limnanthemum nymphæoides (*aq*); Linaria dalmatica (3-4); Lotus corniculatus (fading to *o*); Lysimachia ciliata (*pa*; 2-3); L. Nummularia; L. punctata (1); L. vulgaris (2-3); Meconopsis cambrica (*pa*; 1); Mimulus moschatus; M. primuloides; Mitella pentandra (¼); Morina Coulteriana (*pa*; ½-1½); Narcissus Bulbocodium (¼-¾); N. calathinus (*pa*, or *w*; ¾-1); N. incomparabilis (1); N. Jonquilla (*sc*; ¾-1); N. Pseudo-Narcissus (*su*, crown *o*; 1); N. varieties; Nuphar advena (*aq*, anthers *r*); N. luteum (*aq*, *sc*); Œnothera glauca (*pa*; 1-2) and var.; Œ. linearis (¾-1½); Œ. missouriensis latifolia; Ononis Natrix (veined *r*; 1½-2); Onosma stellulata tauricum (½-¾); Orobus aurantius (*d*; 1½); Oxalis lobata (spotted *r*; ¼); Pæonia Wittmanniana (*pa*; 2); Papaver alpinum (*y, pi*, or *w*; ½); P. nudicaule (*o, y*, or *w*; ¾-1½); Pedicularis dolichorhiza (*go*; 1-1½); P. Sceptrum Carolinum (*go*; 3-4); Pentstemon antirrhinoides (*le*; ¾-1½); P. breviflorus (*y* or *pi*, striped *pi* within; 3-6); P. confertus (*su*; ½-1½); P. deustus (1); Polygonum sachalinense (*s-aq, g-y*; 10-12); Potentilla alpestris (½-1); P. ambigua (½); P. argyrophylla (1½-3); Primula Auricula (¼); P. luteola (*s-aq*; 1½-2); P. officinalis vars. (¼-1); P. sikkimensis (*pa*; 1½-2); P. Stuartii (*go*; ¾-1½); P. vulgaris (*pa*; ¼); Pyrethrum achilleæfolium (*go*; 2); Ranunculus asiaticus vars. (*y* or *o*; ¾); R. cortusæfolius (2); R. gramineus (½-1); Rudbeckia grandiflora (disk *p*; 3½); R. maxima (4-9); R. pinnata (*pa*; 3); R. speciosa (*o*, disk *bk p*; 2-3); Saxifraga aizoides (*o* or *go*; ½-¾); S. aretioides (*go*; ¼); S. diversifolia (½-1¼); S.

Yellow (Hardy Perennials)—*continued.*

Hirculus (dotted *r* at base; ¼-½); S. moschata (*pa y* or *p*; ¼); S. pygmæa (⅛); S. sancta; Scabiosa Webbiana (*c-y*; ½); Scolymus grandiflorus (3); Scorzonera hispanica (3); Scutellaria alpina lupulina; Sedum Aizoon (1); S. japonicum (¼); S. kamtschaticum (½); S. reflexum (¾); Sempervivum arenarium (*pa*; ½-¾); S. Braunii (½-¾); S. Heuffelii (*pa*, calyx turning *r-br*; ½-¾); S. soboliferum (*ra*; ¾-1); Senecio Doria (4); S. Doronicum (1); Silene Saxifraga (*r-br* beneath; ¼-½); Silphium laciniatum (3-6); Solidago Drummondii (1-3); S. lanceolata (2-3); S. speciosa (3-6); Stachys Maweana (*pa*, blotched *p*; 1); Sternbergia lutea (½-1); S. l. sicula (½-1); Stylophorum diphyllum (*d*; 1); Tanacetum leucophyllum (*go*; ¾); Thermopsis montana (1-2); Tritonia Pottsii (flushed *r* outside; 3-4); Trollius europæus (*pa*; ½-2); Tropæolum polyphyllum; Tulipa retroflexa; T. sylvestris (*sc*; 1-2); T. varieties; Uvularia grandiflora (*pa*; ¾-1); U. sessilifolia (¾-1); Vesicaria utriculata (1); Viola Munbyana lutea; V. tricolor vars.; Waldsteinia fragarioides.

Half-hardy.—Annuals.—Callistephus chinensis vars. (½-2); Datura chlorantha flore-pleno (*sc*); Gomphrena globosa aurea superba (1½); Helichrysum bracteatum vars. (3-4); Helipterum Humboldtianum (1-2); Lindheimera texana (1-2); Mentzelia bartonioides (*su*; 1); Mimulus luteus (*d* marks; ¾-1); Mirabilis Jalapa (*y*, *w*, or *r*; 2); Momordica Charantia; Tagetes erecta (2); T. patula vars. (1½); T. tenuifolia (2); Zinnia elegans (*bu*; 2).

Perennials.—Abronia arenaria (*le*, *sc*; ¾-1½); Amicia Zygomeris (splashed *p*; 8); Arctotis acaulis (*y* and *r*; ¼); A. grandiflora (*o*; 1½); A. reptans (*o* and *w*; ¾); A. speciosa (1½); Calceolaria amplexicaulis (1½); C. Fothergillii (¼-½); C. varieties; Centaurea ragusina (2); Collinsonia anisata (*pa*; 2-3); Cypella Herberti (1); Gladiolus purpureo-auratus (*go*, blotched *p*; 3-4); G. varieties (1-3); Hedychium Gardnerianum (*le*; 3-5); Lilium japonicum (tinged *p* outside; 4-5); L. Krameri (tinged *r*, *sc*; ¼); Neja gracilis (1); Othonnopsis cheirifolia (¾-1); Sarracenia flava (2); Satyrium coriifolium (1); Tigridia pavonia (*go-o*; 1-2); Tropæolum tricolorum Regelianum; Viola pedunculata (*d*); Zephyranthes Andersoni (*go* or *br*; ¼).

Tender.—Annuals.—Oxalis Barrelieri (*c-h*, spotted *o*; ¾-1); Salpiglossis sinuata vars. (*c-h*; 2); Thunbergia alata aurantiaca (*st*, *d*); Torenia flava (*st*, *p* eye; ½-¾); Waitzia aurea (*c-h*, *go* or tinged *br*; 1-2); W. nivea (*c-h*, *pa y*, *pi*, or *w*; 1½).

Perennials.—Acineta densa (*c-h*, *le*, dotted *br*, *sc*); A. Humboldtii (*c-h*, *str*, dotted *br*; 1); Æchmea calyculata (*st*, bracts *r*; ¾); Æschynomene aspera (*st*; 6-8); Aglaonema pictum (*st*, 1-2); Albuca angolensis (*c-h*; 3); A. aurea (*c-h*, *pa*; 2); A. flaccida (*c-h*, *pa*, *g* keel; 2); Amomum angustifolium (*st*, *chr* or *r*; 8); Angræcum citratum (*st*, *pa*, or *c*); A. Kotschyi (*st*, *pa*, spur *r*, *sc*); Anguloa Clowesii (*c-h*, *go*, lip *w*, *sc*; 1½); Anigozanthus flavidus (*c-h*, *g-y*; 3); A. pulcherrimus (*c-h*; 3); Ansellia africana (*st*, spotted *br-r*; 2); A. a. gigantea (*st*, *pa*, barred *br*, *sc*; 2); A. a. nilotica (*st*, spotted *br-r*); Aspasia epidendroides (*st*, *pa*; 1); A. papilionacea (*st*, marked *br* and *v*; ¾); Babiana stricta sulphurea (*c-h*, *pa*, or *c*; ¾); Begonia Pearcei (*i-h*; 1); B. xanthina (*i-h*, *go*; 1); B. varieties (*i-h*); Bifrenaria aurantiaca (*st*, *o*; ¾); Blandfordia aurea (*c-h*, *go*; 1-2); B. flammea (*c-h*; 2); B. nobilis (*c-h*, *o*, margined *y*; 2); Bomarea Caldasiana (*c-h*, *o-y*, spotted *r*); Brassavola glauca (*i-h*, lip *o*, throat *w*; 1); Brassia antherotes (*i-h*, marked *bk-br* and *br*); B. caudata (*i-h*, marked *br*; 1); B. Lanceana (*i-h*, blotched *br*, *sc*; ¾); B. L. macrostachya (*i-h*, spotted *br*, *sc*; ¾); B. Lawrenceana (*i-h*, marked *br* and *g*, *sc*; 1); B. L. longissima (*i-h*, *o* and *pa*, marked *p*; 1); B. maculata guttata (*i-h*, *y-g* and *y*, blotched *br*; 1); Bromelia Fernandæ (*st*, bracts *o-r*; 2); Brunsvigia Cooperi (*i-h*, *su*, edged *r*; 1½); Bulbine alooides (*c-h*; 1); B. caulescens (*c-h*; 2); Bulbophyllum Lobbii (*st*, spotted *p*; ½); B. siamense (*st*, striped *p*); Calanthe Petri (*st*, *pa*); C. Sieboldii (*st*; 1); Calceolaria plantaginea (*c-h*; 1); C. varieties (*c-h*); Callipsyche aurantiaca (*c-h*, *go*; 2); C. mirabilis (*c-h*, *g-y*; 3); Calochortus Benthami (*c-h*; ¼-½); C. luteus (*c-h*, *y* and *g*; 1); C. pulchellus (*c-h*; 1); Camaridium ochroleucum (*st*, *pa*; 1); Canarina Campanula (*c-h*, *o* or *y-p*; 3-4); Canistrum aurantiacum (*st*, *o*); Canna Depute Henon (*st*, *pa*; 4); C. zebrina (*st*, *o*; 6-8); Caraguata Van Volxemii (*st*; 2-3); C. Zahnii (*st*, *pa*; 1); Catasetum callosum (*st*, *br-y*; 1); Cattleya amethystoglossa sulphurea (*i-h*, *y* and *c*, spotted *p*; 2-3); C. citrina (*i-h*, *le*; 1); C. Dowiana (*i-h*, *n*, lip *p*, *pi*, and *y*); C. Trianæ velutina (*i-h*, *pa o*, marked *v* and *p*, *sc*); Centrosolenia bullata (*st*, *str*); Chondrorhyncha Chestertoni (*st*); C. fimbriata (*st*, *su*, spotted *br*); Chysis aurea (*st*, marked *r*; 1); C. chelsoni (*st*, *n*, marked *pi* and *r*; 1); C. lævis (*st*, lip blotched *r*; 1); Cirrhæa Loddigesii (*st*, *g-y*, marked *r*; ¾); Cirrhopetalum aureum (*st*, *str*, marked *go* and *r*; ½); C. Medusæ (*st*, *pa str*, dotted *pi*; ½); C. Thouarsii (*st*, dotted *r*; 1); Cleisostoma (*st*, *su*, *o*, and *go*, marked *br*); Cœlogyne plantaginea (*i-h*, *g-y*, lip *w* and *br*; 1½); C. Schilleriana (*i-h*, lip blotched *p*; ½); Costus Malortieanus (*st*, *go*, banded *o-r*; 1-3); Curcuma australasica (*st*); C. cordata (*st*, *r-y*; 1); C. petiolata (*st*, *pa*; 1½); Cycnoches aureum (*st*, *pa*; 1); C. Lehmanni (*st*, *o*, sepals *pi*); Cypripedium Druryi (*st*, lip spotted *y*; ½); Cyrtochilum citrinum (*st*, *ci*); Dendrobium aggregatum (*c-h*, *d*; ¼); D. Aphrodite (*c-h*); D. aureum (*c-h*, lip marked *br* and *p*; 1); D. Brymerianum (*st*; 2); D. chrysanthum (*c-h*, *d*, *r* blotch; 1); D. chrysotis (*st*, *go* and *o*; 2-6); D. clavatum (*st*, *r* spot; 1-3); D. crassinode (*st*, marked *p* and *o*); D. Dalhousianum (*st*, *bu* and *le*, marked *r* and *pi*; 3-5); D. densiflorum (*st*; 1); D. erythroxanthum (*st*, *o*, striped *p*; 3-4); D. fimbriatum (*st*, *o*; 2-4); D. f. oculatum (*st*, *o*, blotched *p* or *r*; 2-4); D. Jenkinsii (*c-h*, *bu* and *pa*); D. luteolum (*c-h*, *pa*; 1-2½); D. macrophyllum (*st*, *g-y*, lip marked *p*); D. suavissimum (*st*, *br-p* blotch; 1); Epidendrum alatum majus (*c-h*, *pa*, lip striped *p*); E. aurantiacum (*st*, *o*, lip striped *r*; 1); E. falcatum (*st*, *g-y* and *y*, *sc*; 2); Fragaria indica (*c-h*, *go*); Galaxia ovata (*c-h*; ½); Galeandra Baueri lutea (*st*, lip lined *p*; ½); Geissorhiza inflexa (*c-h*, spotted *p*; 1½); Gladiolus varieties (*c-h*; 1-3); Globba atrosanguinea (*st*, bracts *r*; 1-1½); G. Schomburgkii (*st*, *go*, lip *o-r* at base; ½-1); Gloxinia varieties (*st*); Gongora maculata (*st*, spotted *pi-r*; 1½); Gynura aurantiaca (*c-h*, *o*; 2-3); Hedychium flavescens (*st*, *sc*; 2-3); H. flavum (*c-h s-aq*, *o*, *sc*; 3); Heliconia psittacorum (*st*, *o*; 3); Hippeastrum equestre fulgida (*i-h*, *o*, margined *w*; 1); H. e. major (*i-h*, *o*, starred *g*; 1); H. e. flore-pleno (*i-h*, *o*; 1); Hyacinthus varieties (*c-h*, *sc*; ¾-1); Imantophyllum Gardeni (*c-h*, *r-o* or *y*; 1-2); I. miniatum (*st*, *d o*, *bu* below; 1-2); Isoloma hondense (*st*, *r*-hairy; 1); Ixia maculata (*c-h*, *o*; 1); I. odorata (*c-h*, *sc*; 1); Lachenalia Nelsoni (*c-h*, *go*); Lælia xanthina (*i-h*, *go*, lip *w* and *o*; ¾); Limnocharis Plumieri (*i-h aq*; 1½); Littonia modesta (*i-h*, *o*; 2-6); Lycaste aromatica (*st*); Lycoris aurea (*c-h*, *go*, 1); Manulea rubra (*c-h*, *go*; 1-2); Maranta concinna (*st*); Masdevallia Davisii (*c-h*, *o*); M. ionocharis (*c-h*, *w-y*, blotched *p*; ¼); Microstylis calophylla (*st*); M. discolor (*st*, turning *o*); Miltonia flavescens (*i-h*, lip spotted *r*); Mimulus luteus (*c-h*; ¾-1); Mormodes Oceanæ (*st*, *o*; 1); M. pardinum (*st*, spotted *br*); Musschia aurea (*c-h*, *go*; 1-2); Nelumbium luteum (*c-h aq*. *sc*); Odontoglossum cristatum (*c-h*, marked *br* or *p*); O. Lindenii (*c-h*; 2-3); O. Londesboroughianum (*c-h*, *pa*); O. Schillerianum (*c-h*, marked *br* and *p*); O. Wilckeanum (*c-h*, *pa*, blotched *br*); Oncidium ampliatum (*st*); O. calanthum (*i-h*, lip stained *r*); O. Cavendishianum (*st*); O. concolor (*c-h*, *go*); O. cornigerum (*c-h*, spotted *r*); O. divaricatum (*i-h*, *y*, marked *br*; 1½); O. excavatum (*i-h*, *go*, marked *br*); O. flexuosum (*i-h*, spotted *br*); O. Marshallianum (*i-h*, *go*, marked *br*); O. oblongatum (*i-h*); O. rupestre (*i-h*, *go*, spotted *br*; 2); O. varicosum Rogersii (*i-h*, *go*); O. Warscewiczii (*c-h*, *go*, lip marked *w* and *br*); Ornithogalum thyrsoides (*c-h*; ½-1½) and vars.; Peristeria pendula (*st*, *pa*, spotted *r* and

Yellow (Tender Perennials)—*continued.*

Yellow (Tender Perennials)—*continued.*

br; 1); Phaius Wallichii (*i-h*, *o* or *bu*, tinged *p*; 4-5); Phormium Cookianum (*c-h*; 3-6); P. tenax (*c-h*, *y* or *r*; 6) and vars.; Physalis peruviana violacea (*c-h*, spotted *p* at base; 3); Pitcairnia xanthocalyx (*st*; 1½-2); Pogonia Fordii (*i-h*, nerved *br*, lip *w*); Prepusa Hookeriana (*c-h*, *pa*; 1); Primula Boveana (*c-h*; ½); P. floribunda (*c-h*, *y*; ½); P. verticillata simensis (*c-h*; 1-1½); Richardia melanoleuca (*c-h*, *pa*, *bk-p* spot at base, spadix *w*; 1½); Saccolabium acutifolium (*st*, lip *pa pi*); S. bigibbum (*st*, lip *w* and *y*); Sandersonia aurantiaca (*c-h*, *o*; 1½); Scuticaria Steelii (*st*, *pa*, lip marked *br-r* and *o*); Sedum sarmentosum (*c-h*); Sempervivum aureum (*c-h*; 1); Sinningia conspicua (*st*, marked

Yellow (Tender Perennials)—*continued.*

p; 1); Sparaxis tricolor (*c-h*, *o* and *y*, spotted *bk*; 1-2); S. varieties (*c-h*); Spathoglottis Fortunei (*st*, lip blotched *r*); S. Lobbii (*st*, *su*, marked *br*); S. pubescens (*st*, lip marked *v*); Stenomesson vitellinum (*i-h*; 1); Stylidium spathulatum (*c-h*, *pa*; 1½); Tillandsia Saundersii (*st*, *su*; 1½); T. splendens (*st*, bracts *p*); Tritonia crocata (*c-h*, *pa*; 2); Tropæolum Lobbianum (*c-h*, *o*); T. peregrinum (*c-h*); Turnera ulmifolia (*st*; 2-4); Utricularia bifida (*c-h*); Villarsia parnassifolia (*c-h*; 1-2); V. reniformis (*c-h*; ½-3); Wachendorffia thyrsiflora (*c-h*; 2); Warrea tricolor (*st*, *pa*, lip *p* and *w*; 2); Zephyranthes citrina (*i-h*; ½-1); Zygopetalum citrinum (*i-h*, lip marked *bk* and *r*).

SHRUBS AND SUB-SHRUBS.

IN gardens of any pretensions Shrubs are indispensable, both for indoor and for outdoor cultivation. A Shrubbery is now generally considered a necessary item in any large establishment, and the best subjects, both evergreen and deciduous, may be chosen by means of the following lists. The height attained by the various species is in most cases appended to the description, the figures denoting feet: this should be found of much service to persons desirous of making a selection of Shrubs for massing, or for growing as isolated specimens on lawns, &c. By means of this information, suitable plants can also be chosen to serve as a background to herbaceous borders, and for similar purposes.

A good list of tender evergreens is given, and will be found useful when selecting plants for the winter decoration of Conservatories and other Glass-houses.

For borders, some of the dwarf-growing, hardy evergreens here enumerated are especially desirable in winter, as in such positions there are then very few herbaceous subjects showing signs of growth, with the exception of bulbous plants such as *Crocus*, *Galanthus*, &c.

The lists of Deciduous and Evergreen Climbers will be of service where it is desired to cover walls or dead tree-trunks, or to form arbours, screens, &c.; and the Trailers may prove of use for planting in Rockeries, or for interspersing with erect-growing subjects in Shrubberies, &c.

For full information as to the general treatment of Shrubs, the reader is referred to the article "Shrubs and Shrubberies" in Vol. III.

The following are the abbreviations employed:—

aq, aquatic; *b*, blue; *bk*, black; *br*. brown; *c*, cream; *c-h*, cool-house; *fl*, flowers; *fol*, foliage; *fr*, fruit; *g*, green; *gl*, glaucous; *gy*, grey; *i-h*, intermediate-house; *l*, lilac; *m*, magenta; *mv*, mauve; *o*, orange; *p*, purple; *pi*, pink; *r*, red; *s-aq*, semi-aquatic; *sc*, scented; *si*, silvery; *st*, stove; *v*, violet; *w*, white; *y*, yellow.

Where not otherwise specified, the leaves are green. Plants of a sub-shrubby nature are here indicated by an asterisk.

DECIDUOUS.—Hardy.—Acæna microphylla* (*fl g* and *r*; ⅛); A. millefolia*; A. myriophylla* (½-1); A. pulchella* (*fol* bronzy); Acer circinatum (*fl r*; *fol r* in autumn; 5-6); A. heterophyllum (4); A. japonicum vars. (*fl p-r*; 1½-3); A. opulifolium (8); A. o. obtusatum; A. palmatum vars.; Adenocarpus hispanicus (*fl y*; 2-4); A. intermedius (*fl y*; 3-4); A. parvifolius (*fl y*; 3-4); A. telonensis (*fl y*; 2-4); Alyssum saxatile* (*fl y*; 1) and var.; A. serpyllifolium* (*fl y*; ¼); Amelanchier vulgaris (*fl w*; 3-9); Amorpha canescens (*fl b*; 3); A. fruticosa (*fl b-p*; 6); Amygdalus incana (*fl r*; 2); A. nana (*fl pi*; 2-3); Artemisia Abrotanum (*fl y*; *fol sc*; 2-4); Asimina triloba (*fl p* and *y*; 10); Azalea arborescens (*fl r*; 10-20); A. calendulacea (*fl y, r, o,* and *br*; 2-6); A. nudiflora (*fl r-pi*; 3-4); A. pontica (*fl y*; 4-6); A. speciosa (*fl r* and *o*; 3-4); A. viscosa (*fl w, sc*; 2-4) and var.; Betula fruticosa (*fl w-br*; 5-6); B. nana (*fl w-g*; 1-3); B. pumila (*fl w*; 2-3); Calophaca wolgarica (*fl y*; 2-3); Calycanthus floridus (*fl p, sc*; 4-6); C. glaucus (*fl p*; 4-6); C. lævigatus (*fl p*; 3-6); C. occidentalis (*fl r, sc*; 6-12); Calycotome spinosa (*fl y*; 5-6); Caragana frutescens (*fl y*; 2-3); C. jubata (*fl w*, suffused *r*; 1-2); C. spinosa (*fl y*; 4-6); Cephalanthus occidentalis (*fl w-y*; 7); Cerasus pseudo-cerasus (*fl w*; *fr r*; 6-10); Chimonanthus fragrans (*fl w* or *y* and *p*, *sc*); Chionanthus virginica (*fl w, sc*; 10-30); Clematis aromatica (*fl v-b, sc*; 4-6); Clethra acuminata (*fl w, sc*; 10-15); C. alnifolia (*fl w*; 3-4); C. paniculata (*fl w, sc*, 3-4); C. tomentosa (*fl w*; 3-4); Colutea arborescens (*fl y*; 6-10); C. cruenta (*fl r-y*; 4-6); Comptonia asplenifolia (*fl w*; 3-4); Cornus paniculata (*fl w*; 4-8); C. sanguinea (*fl g-w*; 6-8); C. sericea (*fl w*; 5-8); C. stricta (*fl w*; 8-15); Corylopsis spicata (*fl y, sc*; 3-4); Corylus Avellana vars.; C. tubulosa vars.; Cotoneaster vulgaris (*fl r*; *fr r*; 3-5); Cratægus Crus-galli ovalifolia (*fl w*; 10-20); C. C.-g. prunifolia (*fl w*; 15-20); C. Douglasii (*fl w*; 10-15); C. flava (*fl w*; 12-20); C. heterophylla (*fl w*; 10-20); C. nigra (*fl w*; 10-20); C. odoratissima (*fl w, sc*; 10-20); C. orientalis (*fl w*; 12-20); C. Oxyacantha (*fl w*, sometimes *pi, sc*; 10-20) and vars.; C. tanacetifolia (*fl w*; 12-20); Cydonia (Pyrus) japonica (*fl r*; 5-6); C. (Pyrus) Maulei (*fl r*); Daphne Mezereum (*fl r*; 3-4); Deutzia corymbosa (*fl w*; 5); D. crenata (*fl w*; 4-8); D. gracilis (*fl w*; 1-2); Diervilla grandiflora (*fl pi*; 8) and vars.; D. rosea (*fl pi* or *w*; 6) and vars.; Dimorphanthus mandschuricus (6-10); Dirca palustris (*fl y*; 2-5); Enkianthus japonicus (*fl w*; *fol* becoming *y-o*); Euonymus atropurpureus (*fl p*; 6-14); E. europæus (*fl g-w*; 6-20); E. latifolius (*fl w* to *p*; 6-8); Forsythia suspensa (*fl y*); F. viridissima (*fl y*; 10); Fothergilla alnifolia (*fl w, sc*; 3-6); Fremontia californica (*fl y*; 6-10); Gordonia pubescens (*fl w, sc*; 4-6); Halimodendron argenteum (*fl p*; 4-6); Hamamelis virginica (*fl y*; 12); Hibiscus syriacus (6) and vars.; Hippophae rhamnoides (*fl y*; 2-20); Hydrangea hortensis (2-3) and vars.; H. paniculata grandiflora (*fl w*); Hypericum calycinum (*fl y*; 1); Iberis Tenoreana* (*fl p* or *w*; ½); Kerria japonica (*fl o-r*; 3-4); Leycesteria formosa (*fl w*, tinged *pi*; 4-6); Lonicera tatarica (*fl pi*; 4-6); Magnolia parviflora (*fl w*, tinged *pi*); Microglossa albescens* (*fl b* or *w*); Nuttallia cerasiformis (*fl w*; 5); Ononis rotundifolia* (*fl pi*; 1-1½); Pæonia Moutan (*fl* variable; 3); Parrotia persica (*fol* becoming *o* or *y* and *g*; 10); Pavia alba (*fl w*; 3-9); P. californica (*fl w* or *pi, sc*; stamens *o*; 12-15); Philadelphus coronarius (*fl w, sc*; 2-10); P. Gordonianus (*fl w*; 10); P. grandiflorus (*fl w, sc*; 10); P. hirsutus (*fl w*; 3); P. inodorus (*fl w*; 4-6); Potentilla fruticosa (*fl y*; 2); Prunus cerasifera (*fl w*); P. Pissardii (*fl w*); P. triloba (*fl w* or *pi*; 6); Pyrus arbutifolia (*fl w* or tinged *p*; 2-10); P. Aria (*fl w*; 4-40); P. Chamæmespilus (*fl r*; 5-6); P. floribunda (*fl pi-r*); P. Toringo (*fl w* or tinged *pi*); Rhododendron dahuricum (*fl pi*; 3); Rhodora canadensis (*fl pi-p*, rarely *w*; 2-4); Rhus Cotinus (*fl p* or *pi-w*; 6-8); R. glabra (*fl g-y* or *g-r*; 5-18) and var.; R. typhina (*fl g-y*; 10-30); Ribes aureum (*fl y*; 5-8); R. floridum (*fl w*; *fr bk*; 4); R. gracile (*fl w*; *fr p*; 4-5); R. Grossularia (*fl g*; *fr*; 4); R.

Deciduous (Hardy)—*continued.*

lacustre (*fl g-y*; 4); R. nigrum (*fl g*; *fr bk*; 5); R. oxyacanthoides (*fl g*; *fr r* and *g*, or *p-b*; 2-3); R. rubrum (*fl g*; *fr r*; 4); R. sanguineum (*fl pi*; *fr p*, with *gl* bloom; 4-8); R. speciosum (*fl r*; *fr r*; 6-8); Robinia hispida (*fr pi*; 3-8); Rosa acicularis (*fl w-pi, sc*; 8); R. alba (*fl w* or *w-pi, sc*; 4-7); R. alpina (*fl pi* or *pi-r*; 3); R. blanda (*fl pi*; 1-3); R. bracteata (*fl w*; 2); R. canina (*fl* usually *pi*; *fr r*; 6-8); R. centifolia (*fl pi-p, sc*; 3-6); R. c. muscosa (*fl pi* or *w*); R. damascena (*p w* or *r, sc*; 2-4); R. gallica (*fl r*; 2-3); R. hemisphærica (*fl y*; 3); R. indica (*fl r*; 4-20); R. lucida (*fl r*; 1-2); R. lutea (*fl y*; 3); R. mollis pomifera (*fr r*); R. nitida (*fl r*; *fol* becoming *p*; 2); R. rubiginosa (*fl pi*; 5; plant *sc*); R. rugosa (*fl r*; *fr o-r* to *r*; 4); Rubus biflorus (*fl w*; 5); R. deliciosus (*fl p*; 3); R. spectabilis (*fl r*; *fr r*; 6-10); Salix phylicifolia (10); Sambucus racemosa (*fl w*; *fr r*); Spartium junceum (*fl y, sc*; 6-10); Spiræa Douglasii (*fl pi*; 3); S. Lindleyana (*fl w*; 4-8); S. prunifolia flore-pleno (*fl w*; 3); Staphylea colchica (*fl w*; 3-5); S. pinnata (*fl w*; 6-12); Stuartia pentagyna (*fl c*; 10); S. virginica (*fl w*; 8); Styrax grandifolia (*fl w*; 6); Symphoricarpus occidentalis (*fl w*, tinged *pi*); Syringa Emodi (*fl p* or *w*; 6); S. Josikæa (*fl b-p*; 5-10); S. vulgaris (*fl r, b,* or *w*; 8-20); S. v. alba (*fl w*; 12-15); Tamarix gallica (*fl w* or *pi*, 5-10); T. parviflora (*fl pi*); Vaccinium corymbosum (*fl w* or *pi*; *fr b-bk*; 5-10); V. formosum (*fl r-pi*; *fr b*; 2-3); V. pennsylvanicum (*fl w* or *pi*; *fr b-bk, gl*; ¾-1); V. stamineum (*fl p* or *y-g*; *fr g* or *y*; 2-3); Viburnum dentatum (*fl w*; *fr b* or *p*; 5-10); V. dilatatum (*fl w*; 10); V. macrocephalum (*fl w*; 20); V. Opulus (*fl w* or *c-w*; *fr r*; 6-8); V. O. sterilis (*fl w*); V. plicatum (*fl w*; 4-6); V. prunifolium (*fl w*; 6); Zenobia speciosa (*fl w*; 2-4).

Half-hardy.—Ascyrum Crux-Andreæ (*fl y*; 1); Clematis Viorna coccinea (*fl r* and *y*; 5-6); Coronilla minima* (*fl y, sc*); Gaylussacia frondosa (*fl g-p*; *fr b*; 3-6); G. resinosa (*fl r*; *fr bk*, rarely *w*; 1-3); Hydrangea quercifolia (*fl w*; 4-6); H. Thunbergii (*fl b* or *pi*; 2-3); Ononis arragonensis (*fl y*; 1-2); Piper Futokadsura (*fl g*; *fr r*); Vaccinium Mortinia (*fl pi*; 2-3); Viburnum odoratissimum (*fl w, sc*; 6-10); Vitex Agnus-castus (*fl l*; 6).

Tender.—Abelia rupestris (*c-h, fl r-pi, sc*; 5); Barnadesia rosea (*c-h, fl pi*; 1½); Capparis spinosa (*c-h, fl w*; tinged *r*; 3); Chænostoma linifolia* (*c-h, fl w* and *y*; 1); Clerodendron Bethuneanum (*st, fl r*, spotted *w* and *p*; 10); C. fallax (*st, fl r*); C. fœtidum (*c-h, fl, l-pi*; 5); C. fragrans (*c-h, fl w*; 6); C. f. flore-pleno (*c-h, fl w*, suffused *pi, sc*; 6); C. squamatum (*st, fl r*; 10); Fuchsia corymbiflora (*c-h, fl r*; 4-6); F. dependens (*c-h, fl r*; 2-4); F. simplicicaulis (*c-h, fl pi-r*); F. splendens (*c-h, fl r* and *g*; 6); Gordonia anomala (*c-h, fl c*; 3); Moltkia petræa* (*c-h, fl pi-p*, becoming *v-b*; ½-¾); Pachypodium succulentum (*c-h, fl r* and *w*; 1); Solandra (Dissochroma) viridiflora (*st, fl g*; 2-3).

EVERGREEN.—Hardy.—Adenostoma fasciculata (*fl w*; 2); Ammodendron Sieversii (*fl p*; 2); Anthyllis erinacea (*fl b-p*; ½-1); Arbutus Unedo (*fl w*; *fr r*; 8-10); Artemisia argentea (*fl y*; 1½); A. cœrulescens (*fl b*; 2); Astragalus Tragacantha (*fl v*; 1½-3); Aucuba himalaica (*fr*); A. japonica (*fol* spotted *y*; 6-10); Azalea ledifolia (*fl w*; 2-6); Azara microphylla (*fl g*; *fr o*; 12); Bambusa Fortunei (*fol g*; 1-2); Benthamia fragifera (*fl w*; 10-15); Berberis Darwinii (*fl o*; 2); Boleum asperum (*fl c*; ½-1); Bupleurum frutescens (*fl y*; 1); B. fruticosum (*fl y*; *fol g*; 3-6); Buxus sempervirens vars.; Calluna vulgaris vars.; Cassandra angustifolia (*fl w*; 1-2); C. calyculata (*fl w*; 1-3); Cassiope tetragona (*fl w*; ½-¾); Ceanothus dentatus (*fl b*; 4-6); C. floribundus (*fl b*; 4); C. Veitchianus (*fl b*; 3); Cerasus Laurocerasus (*fl w*; 6-10) and vars.; C. lusitanica (*fl w*; 10-20); Chamæcyparis obtusa nana; C. o. plumosa (15-20); C. o. p. albo-picta (branchlets *w*); C. o. p. argentea (*fol c-w*, turning *g*); C. o. p. aurea (*fol y*, turning *g*); C. squarrosa (*fol gl-g* above,

Evergreen (Hardy)—*continued.*

gl-banded beneath; 4-6); Chimaphila corymbosa* (*fl g-w*, tinged *r*; ¼-½); C. maculata (*fl w*; *fol* banded *w* above, *r* beneath); Cineraria maritima (*fl y*; *fol si*-downy; 2); Convolvulus Cneorum (*fl pi*; *fol si*-tomentose; 1-3); Coriaria myrtifolia (*fl g*; 4-6); Cotoneaster buxifolia (*fl w*; 3-4); C. microphylla (*fl w*; 3-4); C. thymifolia (*fl pi*; *fol si-w* beneath; 1); Cratægus Pyracantha (*fl w*; *fr r*; 10-20); Cupressus Goveniana (*fl y*; 15-20); C. MacNabiana (*fol*; 10-15); Daphne pontica (*fl g-y*, *sc*; 4-5); Dendromecon rigida (*fl y*); Dorycnium suffruticosum (*fl w* and *r*; 2-3); Elæagnus longipes (*fr o*; *fol si-w* beneath; 3); E. macrophylla (*fl g-y*; *fol si*-scaly; 6); E. pungens (*fl y*; *fol si* beneath; 6); Empetrum nigrum (*fl pi*; anthers *r*; ½-1) and var.; Erica carnea (*fl* pale *r*; ½); E. ciliaris (*fl r*; 1); E. scoparia (*fl g*; 2-3); E. vagans (*fl p-r*; 1); Fabiana imbricata (*fl w*; 3); Frankenia pulverulenta (*fl r*; ¼); Garrya elliptica (*fl g-w* or *y*; 8-10); Gaultheria procumbens (*fl w*; *fr r*); G. Shallon (*fl w*, tinged *r*; *fr p*; 2); Iberis correæfolia (*fl w*; 1); I. saxatilis (*fl w*; ¼-½); I. sempervirens (*fl w*; ¾-1); I. s. Garrexiana (*fl w*; ½-¾); Ilex Aquifolium vars. (*fol* variegated); I. cornuta; I. crenata; I. dipyrena (12); I. latifolia (20); I. opaca (20-40); Indigofera Gerardiana (*fl r*; *fol gy-g*, *gl* below); Juniperus chinensis vars.; J. communis vars.; J. occidentalis (*fol gl* when young; 10-50); J. phœnicea (*fol*; 15-18); Kalmia angustifolia (*fl p* or *r*; 2-3); K. glauca (*fl l-p*; *fol gl-w* beneath; 1-2); K. latifolia (*fl pi* to *w*; 3-10); Lavandula vera (*fl b*, rarely *w*; 1-2); Ledum latifolium (*fl w*; *fol br*-tomentose beneath; 1-3); L. palustre (*fl w*; *fol br*-tomentose beneath; 2); Leiophyllum buxifolium (*fl w* and *pi*; ½-1); Leucothoë axillaris (*fl w*; 2-3); L. Davisiæ (*fl w*; 3-5); L. racemosa (*fl w*; 4-10); Ligustrum japonicum (*fl w*, *sc*; 6-8); L. lucidum (*fl w*; 8-12); L. Massalongianum (*fl w*, *sc*; 6); L. ovalifolium (*fl w*) and var.; Linum tauricum (*fl w*; 1½); Lonicera fragrantissima (*fl w*, *sc*; 6); Lupinus arboreus (*fl y*, *sc*); Magnolia glauca (*fl w*, *sc*; *fol gl* below; 15); Margyricarpus setosus (*fr w*; 2-4); Olearia Haastii (*fl w*; *fol w* beneath); Osmanthus Aquifolium (*fl w*, *sc*; 6); O. fragrans (*fl y* or *w*; 6-10); Pernettya furens (*fl w*; 3); P. mucronata (*fl w*; 6); P. pilosa (*fl w*; ½); Phillyrea Vilmoriniana (*fl w*); Phlomis fruticosa (*fl y*; 2-4); Pieris floribunda (*fl w*; 2-6); P. japonica (*fl w*); Quercus Ilex and vars.; Rhododendron Anthopogon (*fl g-y*; 1-1½); R. caucasicum (*fl pi*, and *w* spotted *g*; 1); R. ciliatum (*fl r-p*; 2); R. Clivianum (*fl w*, tinged *pi*, and dotted *p-r*; 4); R. ferrugineum (*fl r*, dotted *gy* or *y*; *fol br*-dotted beneath; 1); R. Fortunei (*fl pi*, *sc*; *fol gl* below; 12); R. hirsutum (*fl r*; *fol br*-dotted beneath; 1-2); R. Metternichii (*fl pi*); Rhodothamnus Chamæcistus (*fl pi*; ½); Rhodotypos kerrioides (*fl w*; 15); Rosmarinus officinalis (*fl w* or *b-p*; 2-4); Salvia ringens (*fl r-p*; 1-2); Skimmia japonica (*fl w*, *sc*; *fr r*; 3-4); S. Laureola (*fl y*, *sc*; *fol y* beneath; 4); S. oblata (*fr r*); S. rubella (*fl g-w*; buds tinged *r*); Spiræa cantoniensis (*fl w*; 3-4); Taxus baccata adpressa (*fol gl* beneath; 6-8); T. cuspidata (*fol y-g* beneath; 15-20); Thuya occidentalis Elwangeriana (*fol*); T. orientalis (*fol*; 18-20); Veronica pinguifolia (*fl w*; ¼-4); V. Traversii (*fl w*; 2½); Viburnum Tinus (*fl w*; *fr b*; 8-10); V. T. lucidum (*fl w*).

Half-hardy.—Adenocarpus foliolosus (*fl y*; 4-6); A. frankenioides (*fl y*; 1-3); Arctostaphylos nitida (*fl w*; 1-4); A. pungens (*fl w*; 1); Azara Gillesii (*fl y*; 15); A. integrifolia (*fl y*, *sc*; 18); Buddleia globosa (*fl o*; 15-20); Buxus balearica (*fol y-g*; 15-20); Cassia corymbosa (*fl y*; 6-10); Ceanothus cuneatus (*fl b* or *w*; 4); C. integerrimus (*fl w*; 3-6); C. rigidus (*fl p-b*; 5-6); Cedronella triphylla (*fl w* or *p*; *fol sc* when rubbed; 3-4); Ceratiola ericoides (*fl br*); Chamæbatia foliolosa (*fl w*; 2-3); Cheiranthus mutabilis (*fl c*, turning *p*, or striped; 2-3); Cistus albidus (*fl p* and *y*; 2); C. crispus (*fl r-p*; 2); C. hirsutus (*fl w*, marked *y*; 2); C. ladaniferus (*fl r* and *y*; 2); C. l. maculatus (*fl w*, spotted *r*); C. latifolius (*fl w*, spotted *y*; 3); C. laxus (*fl w*, spotted *y*; 3); C. longifolius (*fl w*, marked *y*); C. monspeliensis (*fl w*; 4); C. m. florentinus (*fl w*, *y* at base; 3); C. oblongifolius (*fl w*, spotted *y*; 4); C. obtusifolius (*fl w*, spotted *y*; 1-1½); C. psilosepalus (*fl w*, marked *y*; 2-3); C. purpureus (*fl r-p*; 2); C. rotundifolius (*fl p*, marked *y*; 1); C. salvifolius Corbariensis (*fl w*; 2); C. vaginatus (*fl pi*; 2); C. villosus (*fl r-p*; 3); C. v. canescens (*fl p*, marked *b* and *y*; 2); Cordyline australis (*fl w*, *sc*; 10-40) and var.; Corokia Cotoneaster (*fl y*, *sc*); Coronilla glauca (*fl y*, *sc*; 2-4); Embothrium coccineum (*fl o-r*; 3); Escallonia floribunda (*fl w*; 10); E. macrantha (*fl r*; 3-6); E. organensis (*fl pi*; *fol* margined *r*; 2-4); E. rubra (*fl r*; 3-6); Euonymus fimbriatus (*fl w*; 12); E. japonicus (*fl w*; 20); Eurya japonica latifolia variegata (*fl w*; *fol* variegated *y*); Fatsia japonica and vars.; F. papyrifera (*fl g*; 6-8); Geranium anemonæfolium (*fl p-r*; 1-2); Grindelia glutinosa (*fl y*; 2); Hudsonia ericoides (*fl y*; 1); Hypericum empetrifolium (*fl y*; ½-1); H. Hookerianum (*fl y*; 2); Iberis gibraltarica (*fl w*, suffused *pi* or *r*; 1-2); I. semperflorens (*fl w*, *sc*; 1-2); Illicium anisatum (*fl y-w*, *sc*; 4); I. floridanum (*fl r*, *sc*; 8); Indigofera decora alba (*fl w*); Linum arboreum (*fl y*; 1); L. flavum* (*fl y*; 1-1½); Lupinus mutabilis* (*fl w* and *b*, changing to *b* and *y*; 5); Mathiola bicornis* (*fl p-r*); Myrtus communis (*fl w*; 3-10) and vars.; Olearia dentata (*fl pi-w*; 3); O. Gunniana (*fl w*; 3-5); Phillyrea media (*fl w*; 10-15); Photinia japonica (*fl w*; *fr o-r*; 10-20); P. serrulata (*fl w*; 10-20); Pieris formosa (*fl w*); Piptanthus nepalensis (*fl y*; 10); Pittosporum crassifolium (*fl br-p*; 4-10); P. Tobira (*fl w*, *sc*; 12); P. undulatum (*fl w*; 10); Plagianthus Lampenii (*fl y-w*; 6-8); Reaumuria hypericoides (*fl p*; 2); Rhododendron campanulatum (*fl l* spotted *p*, or *pi*; *fol gy*-powdery below; 4); R. cinnabarinum (*fl br-r*); R. glaucum (*fl pi-p*; *fol* beneath *gl*, nearly *w*; 2); R. lepidotum (*fl y* or *p*, dotted *g*; anthers *r-br*; 2-4); R. Maddeni (*fl w*, tinged *w-pi*; 6-8); R. Veitchianum (*fl w*; *fol gl* and *r* or *br* scaly beneath; 6); Stachyurus præcox (*fl y-g*; 10); Sutherlandia frutescens (*fl r*; 3); Veronica Andersonii (*fl b-v*; 1½); V. elliptica (*fl w*; 5-10); V. Hulkeana (*fl l*; 1-3); Zauschneria californica (*fl r*; 1).

Tender.—Abelia floribunda (*c-h*, *fl pi-p*; 3); A. triflora (*c-h*, *fl y*, tinged *pi*; 5); Abutilon insigne (*c-h*, *fl p-r*; 6); A. striatum (*c-h*, *fl o-y*, striped *r*; 10); A. vittifolium (*c-h*, *fl b*; 30); A. varieties (*c-h*); Acacia affinis (*c-h*. *fl y*; 5); A. albicans (*c-h*, *fl w*; 5); A. armata (*c-h*, *fl y*; 6-10); A. brachybotrya (*c-h*, *fl y*; 8); A. cultriformis (*c-h*, *fl y*; 4); A. cuneata (*c-h*, *fl y*; 6); A. dealbata (*i-h*, *fl y*; 10-20); A. Drummondi (*c-h*, *fl y*; 10); A. glauca (*c-h*, *fl w*; 5-10); A. grandis (*c-h*, *fl y*; 6); A. heterophylla (*c-h*, *fl y*; 5); A. hispidissima (*c-h*, *fl w*; 3-6); A. linearis (*c-h*, *fl y*; 3-6); A. longifolia (*c-h*, *fl y*; 10); A. lunata (*c-h*, *fl y*; 2-4); A. mollissima (*c-h*, *fl y*; *fol y*-downy; 10-20); A. oxycedrus (*c-h*, *fl y*; 6-10); A. platyptera (*c-h*, *fl y*; 3); A. pubescens (*c-h*, *fl y*; 6-10); A. pulchella (*c-h*, *fl y*; 2-3); A. Riceana (*c-h*, *fl y*; 20); A. sphærocephala (*st*, *fl y*); A. verticillata (*c-h*, *fl y*; 6-10); A. vestita (*c-h*, *fl y*; 4); A. viscidula (*c-h*, *fl y*; 6); Aciotis discolor (*i-h*. *fl r*; *fol p* beneath; 1); Acmadena tetragona (*c-h*, *fl w*; 1-2); Acmena floribunda (*c-h*, *fl w*; *fr p*; *fol* dotted; 4); A. ovata (*c-h*, *fol p*); Acradenia Frankliniæ (*c-h*, *fl w*; *fol sc*; 8); Acridocarpus natalitius (*i-h*, *fl y*); Acronychia Cunninghami (*c-h*, *fl w*, *sc*; 7); Acrophyllum venosum (*c-h*. *fl pi-w*; 6); Acrotriche cordata (*c-h*, *fl w*; 1); A. divaricata (*c-h*, *fl w*; ½-1); Adenandra amœna (*c-h*, *fl w* and *r*; 1-2); A. fragrans (*c-h*, *fl pi*, *sc*; 1-2); A. marginata (*c-h*, *fl pi*; 1-2); A. umbellata (*c-h*, *fl pi*; 1-2); A. uniflora (*c-h*, *fl w*, *pi* outside; 1-2); A. villosa (*c-h*, *fl pi*; 1-2); Adenanthos barbigera (*c-h*, *fl r*; 7); A. obovata (*c-h*. *fl r*; 5); Adesmia glutinosa (*c-h*. *fl y*; 1-2); A. microphylla (*c-h*, *fl y*; 1-2); Adina globiflora (*i-h*. *fl y*; 3-4); Ægiphila grandiflora (*st*. *fl y*; *fr b*; 3); Æschynanthus atrosanguinea (*st*, *fl r*, *sc*; 1½); Æ. Boschianus (*st*, *fl r*, *sc*; 1); Æ. cordifolius (*st*, *fl r*, *bk*, and *o*, *sc*; 1); Æ. fulgens (*st*, *fl r* and *o*, *sc*;

Evergreen (Tender)—*continued.*

1); Æ. grandiflorus (*st, fl r* and *o, sc*; 5); Æ. longiflorus (*st, fl r, sc*); Æ. miniatus (*st, fl r, sc*; 1½); Æ. speciosus (*st, fl o, sc*; 2); Æ. splendidus (*st, fl r* and *bk, sc*; 1); Æ. tricolor (*st, fl r, o,* and *bk, sc*; 1); Æschynomene sensitiva (*st, fl w*; 3-6); Agapetes buxifolia (*st, fl r*; 5); Agastachys odorata (*c-h, fl y, sc*; 3); Agathosma acuminata (*c-h, fl v*; 1-2); A. bruniades (*c-h, fl l* or *w*; 1-2); A. ciliata (*c-h, fl w*; 1-2); A. erecta (*c-h, fl v*; 1-2); Allamanda neriifolia (*st, fl y,* streaked *o*; 3); Alloplectus peltatus (*st, fl w*; 1); A. zamorensis (*st, fl y* and *o-r*; 1); Alona cœlestis (*c-h, fl b*; 2); Alonsoa albiflora (*c-h, fl w* and *y*; 1½-2); A. incisifolia (*c-h, fl r*; 1-2); Alsodeia latifolia (*st, fl w*; 6); Andersonia sprengelioides (*c-h, fl pi*; 1-3); Angophora cordifolia (*c-h, fl y*; 7-10); A. lanceolata (*c-h, fl w*; 4-6); Anisomeles furcata (*c-h, fl w, r,* and *p*; 4-6); Anona glabra (*st, fl b*; *fol sc*; 16); A. muricata (*st, fl g* and *y, sc*; *fol sc*; 15); Anopterus glandulosa (*c-h, fl w,* tinted *pi*; 3); Anthocercis albicans (*c-h, fl w,* marked *b-p, sc*; 1½-2); A. viscosa (*c-h, fl w*; 4-6); Anthospermum æthiopicum (*c-h, fl b, g*; 2-3); Anthyllis Barba-Jovis (*c-h, fl y*; 4-8); Aotus gracillima (*c-h, fl y* and *pi*; 3); Aphelandra aurantiaca (*st, fl o-r*; 3); A. a. Roezlii (*st, fl r*; *fol* dark *g,* shaded *si*); A. cristata (*st, fl o-r*; 3); A. fascinator (*st, fl r*; *fol* banded *si-w*; 1½); A. Leopoldi (*st, fl g-y*; *fol g* and *w*); A. nitens (*st, fl r*; *fol g* and *p*; 2-3); A. Porteana (*st, fl o*; *fol g* and *si-w*; 2); A. pumila (*st, fl o*; ¾); A. punctata (*st, fl y*; *fol* marked *w*); A. variegata (*st, y*; 1½); Aphelexis ericoides (*c-h, fl w*; 1); A. humilis (*c-h, fl pi*; 2) and vars.; Ardisia crenulata (*st, fl r-v*; *fr r*; 3-6); A. japonica (*c-h, fl w*; 1); A. macrocarpa (*c-h, fl w-pi*; *fr r*; 5-6); A. paniculata (*st, fl pi*; *fr r*; 8-10); A. serrulata (*st, fl r*; 2-3); Aristolochia ciliosa (*st, fl p-y*; 6); A. Duchartrei (*st, fl br* and *c*; 5); A. floribunda (*st, fl p-r* and *y*; 10); A. labiosa (*st, fl g*; 20); A. ornithocephala (*st, fl p, gy,* and *b*; 20); A. ringens (*st, fl g,* marked *bk-p*; 20); A. tricaudata (*st fl p-br*); Artabotrys odoratissimus (*st, fl r-br, sc*; 6); Astelma eximium (*c-h, fl r*; 3); Asystasia chelonioides* (*st, fl r-p* and *w*; 3-4); A. macrophylla (*st, fl pi-p* and *w*; 8-20); A. violacea (*st, fl v-p,* striped *w*; 1-2); Athanasia capitata (*c-h, fl y*; 1½); Athrixia capensis (*c-h, fl r*; 3); Azalea indica (*c-h, fl r,* 3-6) and vars; Babingtonia Camphorasme (*c-h, fl pi-w*; 7); Backhousia myrtifolia (*c-h, fl w*; 16); Bæckea diosmæfolia (*c-h, fl w*; 1-2); B. frutescens (*c-h, fl w*; 2-3); B. virgata (*c-h, fl w*; 2-3); Bambusa arundinacea (*st, fol* light *g*; 50-60); B. aurea (*c-h, fol* turning *y*; 6-10); B. nana (*i-h, fol gl*; 6-8); Banksia collina (*c-h, fol si* beneath; 6-8); B. dryandroides (*c-h, fol r-br* beneath; 6); B. occidentalis (*c-h, fl y*); B. Solanderi (*c-h, fol si-w* beneath; 6); B. speciosa (*c-h, fol si-w* beneath; 6); Barbieria polyphylla (*st, fl r*); Barleria flava (*st, fl y*; 3); Barosma dioica (*c-h, fl p*; 1-2); B. pulchella (*c-h, fl r* or *p*; 1-3); B. serratifolia (*c-h, fl w*; 1-3); Bauera rubioides (*c-h, fl r* or *pi*); Bauhinia natalensis (*st, fl w*); B. variegata (*st, fl r, w,* and *y*; 20); Befaria æstuans (*c-h, fl p*; *fol gl* beneath; 10-15); B. glauca (*c-h, fl pi-w*; *fol gl* beneath; 3-6); B. ledifolia (*c-h, fl p*; 3-4); Begonia coccinea (*st, fl* and peduncles *r*; 1-2); B. crinita (*st, fl pi*; *fol* edged dark *g*; 1); B. dædalea (*st, fl pi* and *w*; *fol g,* marked *br, r* when young; 2); B. Kunthiana (*st, fl w*; *fol* dark *g* above, *r* below; 2); B. Lindleyana (*st, fl w*; 3); B. longipes (*st, fl w*; 3); B. Lynchiana (*st, fl r*); B. maculata (*st, fl r*; *fol g,* blotched *si-w* above, *r* below); B. magnifica (*st, fl pi*); B. Manni (*st, fl pi-r*; 2); B. nitida (*st, fl pi*; *fol* glossy *g*; 4-5); B. opuliflora (*st, fl w*; 2); B. platanifolia (*st, fl w,* tinted *pi*; *fol* dark *g*; 5-6); B. prestoniensis (*st, fl o-r, sc*; 2); B. ramentacea (*st, fl pi* and *w*; *fol r* beneath; 1); Berkheya grandiflora (*c-h, fl y*; 2); Bertolonia marmorata (*st, fol* bright *g,* streaked *w* above, *p* below; ½); B. pubescens (*st, fol* light *g* and *br*; ½); Berzelia lanuginosa (*c-h, fl w*; 1-2); Besleria grandiflora* (*st, fl* spotted *r*; 3); Bignonia speciosa (*st, fl pi,* marked *p*; 4); Blæria articulata (*c-h, fl r*; 1); Bocconia frutescens (*st, fl g*; 3-6); Bœbera incana (*c-h, fl y*; 1½); Borbonia barbata (*c-h, fl y*; 3-4); B. crenata (*c-h, fl y*; 3-6); Boronia

Evergreen (Tender)—*continued.*

crenulata (*c-h, fl r*; 1-4); B. Drummondi (*c-h, fl pi*; 2); B. elatior (*c-h, fl pi, sc*; 4); B. megastigma (*c-h, fl br-p* and *y, sc*; 1); B. pinnata (*c-h, fl pi, sc*; 1-3); B. serrulata (*c-h, fl pi, sc*; 1-6); Bossiæa disticha (*c-h, fl y-r*; 1½); B. linnæoides (*c-h, fl y* and *br*); B. linophylla (*c-h, fl o* and *p*; 1-4); B. rhombifolia (*c-h, fl y, r,* and *br-p*; 1-3); Bouvardia angustifolia (*i-h, fl r*; 2); B. flava (*i-h, fl y*; 1½); B. Humboldtii corymbiflora (*i-h, fl w, sc*); B. jasminiflora (*i-h, fl w, sc*); B. leiantha (*i-h, fl r*; 2); B. longiflora (*i-h, fl w*; 2-3); B. triphylla (*i-h, fl r*; 2-3); Brachychiton Bidwillii (*c-h, fl r*); Brachylæna nerifolia (*c-h, fl y*; 2); Brillantaisia owariensis (*st, fl v-b*; 3); Brongniartia podalyrioides (*c-h, fl p*; 1); B. sericea (*c-h, fl p*; 1); Browallia Jamesoni (*c-h, fl o*; 4); Brownea coccinea (*st, fl r*; 6-10); B. racemosa (*st, fl pi*; 4); Brucea sumatrana (*st, fl p*; 20); Brunfelsia acuminata (*st, fl b-v*; 1-2); B. americana (*st, fl y,* changing to *w, sc*; 4-6); B. calycina (*st, fl p*; 2); B. eximia (*st, fl p*; 2½); B. hydrangeæformis (*st, fl b-v*; 1-3); B. Lindeniana (*st, fl p*); Brunia nodiflora (*c-h, fl w*; 1-3); Buddleia asiatica (*st, fl w, sc*; 3); Bunchosia argentea (*c-h, fl y*; *fol si* beneath; 10); B. odorata (*c-h, fl y, sc*; 7); Burchellia capensis (*st, fl r*; 3-5); Bursaria spinosa (*c-h, fl w*; 10); Burtonia conferta (*c-h, fl v*; 2); B. scabra (*c-h, fl p*; 2); Butea superba (*st, fl r*); Byrsonima chrysophylla (*st, fl y*; *fol r-y* downy beneath; 14); B. lucida (*st, fl pi*; 8); Cajanus indicus (*st, fl y* or spotted *p*; 6-10); Calceolaria bicolor* (*c-h, fl y* and *w*; 2-3); C. fuchsiæfolia (*c-h, fl y*; 1-2); C. hyssopifolia (*c-h, fl y* and *w*; 1-2); C. violacea (*c-h, fl v*; 2); Calliandra Tweediei (*st, fl r*; 6); Callistemon linearis (*c-h, fl r*; 4-6); C. speciosus (*c-h, fl r*; *fol,* when young, *r*; 5-10); Calotropis gigantea (*st, fl pi* and *p*; 6-15); Calycophyllum candidissimum (*st, fl w*; 30); Calythrix tetragona (*c-h, fl w*; 2); Camellia japonica (*c-h, fl* various; 20) and vars.; C. oleifera (*c-h, fl w, sc*; 6-8); Camoensia maxima (*st, fl c* and *y*); Candollea cuneiformis (*c-h, fl y*; 7); Cantua buxifolia (*c-h, fl r*; 4); C. pyrifolia (*c-h, fl y-w*; 3); Capparis amygdalina (*st, fl w*; *fol* under surface, and branches, dotted *si*; 6); C. odoratissima (*st, fl v, sc,* anthers *y*; 6); Careya arborea (*st, fl w,* stamens *r*; 30-60); Carludovica atrovirens (*st, fol* deep *g*); C. Drudei (*st, fl w*; *fol* deep *g*; 4); C. palmata (*st, fol* dark *g*; 4-6); C. Wallisii (*st, fl w, sc*); Carmichælia australis (*c-h, fl l*; 2-4); Cassia alata (*st, fl y*; 6); C. tomentosa (*st, fl y*; 5-7); Cassinia denticulata (*c-h, fl y*; 6-8); Ceanothus azureus (*c-h, fl b*; 10); Celastrus lucidus (*c-h, fl w*; 1-3); Centradenia rosea (*st, fl pi*; 1); Cephaelis tomentosa (*st, fl br*; bracts *r*; 4); Ceratostema speciosum (*c-h, fl o-r*); Cercocarpus fothergilloides (*c-h, fl p*; 12); Cestrum aurantiacum (*c-h, fl o*; 4); C. fasciculatum (*c-h, fl p-r*; 5); C. Newelli (*c-h, fl r*; 6); C. roseum (*c-h, fl pi*; 4); Chætogastra strigosa (*c-h, fl pi-p*; 1); Chiococca racemosa (*st, fl w,* unscented, becoming *y* and *sc*; 4-6); Chirita Moonii* (*st, fl p*; 2); Chloanthes stœchadis (*c-h, fl g-y*; 2); Chomelia spinosa (*st, fl w, sc* at night; 8-12); Chorizema angustifolium* (*c-h, fl o-r*; 1½); C. cordatum* (*c-h, fl r* or *y*; 3); C. diversifolium* (*c-h, fl o-r*; 2); C. Henchmannii* (*c-h, fl r*; 2); C. varium* (*c-h, fl y* and *r*; 4); Citrus medica (*i-h, fl w, sc*; *fr y, sc*; 8-16); C. nobilis (*i-h, fl w, sc*; *fr r*; 15); Cleome gigantea (*st, fl w-g,* filaments *pi,* anthers *y*; 6-12); Clerodendron fallax (*st, fl r*); C. Thomsonæ (*st, fl r* and *w*); Cneorum pulverulentum (*c-h, fl y*; 1-3); Codiæum albicans (*st, fol g,* variegated *w,* tinted *r* beneath); C. angustissimum (*st. fol g,* marked *y*); C. aucubæfolium (*st, fol g,* blotched *y* or *r*); C. Baron Franck Seillière (*st, fol g,* when adult *pi* beneath; nerves *y,* turning *w*); C. chelsoni (*st, fol* variegated *pi-o,* shaded *r*); C. Crown Prince (*st, fol* marked *y*); C. Disraeli (*st, fol* marked *y*); C. Dodgsonæ (*st, fol* marked *y*); C. Earl of Derby (*st, fol* suffused *r*; stems, petioles, and mid-rib *y*); C. elegans (*st, fol* marked *r* or *y* and *pi* above, mottled *p* below); C. Evansianum (*st, fol g,* veined and dotted *y,* changing to bronzy-*r,* veined and dotted *o-r*); C. gloriosum (*st, fol* variegated *c-y*); C. Goldiei (*st, fol* marked *y*);

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C. Hawkeri (*st, fol c-y*, margined *g*); C. Hilleanum (*st, fol* above *p-g* veined *r*, below *p* veined *r*); C. Hookerianum (*st, fol* blotched and veined *y*); C. imperator (*st, fol* marked *c-w*); C. insigne (*st, fol* marked *y* and *r*); C. irregulare (*st, fol* marked *y*); C. Jamesii (*st, fol* sage-*g*, marked *c-w*, *g*, and *y*); C. Johannis (*st, fol* marked *o-y*); C. majesticum (*st, fol*, when young, *g*, ribbed *y*, becoming deep olive, ribbed *r*); C. medium variegatum (*st, fol* marked *y*); C. Mrs. Dorman (*st, fol* striped *o-r*); C. Nevilliæ (*st, fol* olive-*g*, marked *y* when young; when older, metallic-*g*, marked *r*, shaded *o*); C. Pilgrimii (*st, fol* marked *y*, suffused *pi*); C. princeps (*st, fol g*, marked *y*, becoming bronzy-*g*, marked *pi-r*); C. Queen Victoria (*st, fol y*, mottled *g* and margined *pi*; veins *m*, changing to *r*); C. spirale (*st, fol* when young, *g*, marked *y*; when mature, bronzy-*g* with *r* midrib); C. superbiens (*st, fol* at first *g* marked *y*, finally *b*-bronze, *r-br*, and *r*); C. tricolor (*st, fol*, upper surface *g* and *y*, lower surface *r-g*); C. triumphans (*st, fol g*, marked *y*, becoming *g*-bronze; midrib *r*); C. undulatum (*st, fol p* blotched *r*; midrib *p*); C. Veitchii (*st, fol* above *g*, margined and veined *pi*, beneath *p*); C. volutum *st, fol* veined *y*; C. Warrenii (*st, fol* mottled and suffused *o-y* and *pi*, which changes to *r*); C. Weismanni (*st, fol* marked *y*); C. Williamsii (*st, fol*, upper surface banded *y*; midrib and primary veins *m*, changing to *v-r*; under surface *r*); C. Youngii (*st, fol*, upper surface marked *y* and *pi-r*; under surface *r*); Coffea arabica (*st, fl w, sc*; 5-15); Colea floribunda (*st, fl y-w*; 10); Colquhounia tomentosa (*c-h, fl o-r*); Columnea aurantiaca (*st, fl o* and *y-g*); C. aureonitens, *st, fl o-r*); C. erythrophæa (*st, fl r*; 2); C. Kalbreyeriana (*st, fl y*, marked *r*; *fol r* beneath); Comarostaphylis arbutoides (*c-h, fl w*; 6); Conocarpus erectus (*st, fl w*); Coprosma Baueriana picturata (*c-h, fol* blotched *y* and *c-w*); C. B. variegata (*c-h, fol* margined *w*); Cordia decandra (*c-h, fl w, sc*; 3); Cordyline albicans (*st, fol* bordered *w*); C. albo-rosea (*st, fol* edged *pi*, when young *w*); C. amabilis (*st, fol* marked *pi* and *c-w*); C. amboynensis (*st, fol*, lower half edged *r-pi*); C. Baptistii (*st, fol* margined and striped *y* and *pi*; stem variegated); C. cannæfolia (*st*); C. chelsoni (*st, fol bk-g*, marked *r*); C. Cooperii (*st, fol r*); C. Duffii (*st, fol* margined and barred *r*); C. excelsa (*st, fol* margined *r*); C. Fraseri (*st, fol bk-p* marked *pi-r*); C. gloriosa (*st, fol*, when mature, marked bronzy-*o*); C. Guilfoylei (*st, fol* striped *r, pi, y-w*, and *g*); C. indivisa and vars. (*c-h*); C. lutescens-striata (*st, fol y-g* beneath); C. Macarthurii (*st, fol pi* and olive-*g*); C. magnifica (*st, fol* bronzy-*pi*); C. metallica (*st, fol br-p*, becoming *p*-bronze); C. Mooreana (*st, fol* bronzy *p*; midrib *r*); C. nigro-rubra (*st, fol br* and *r-pi*); C. ornata (*st, fol* bronzy *g*, margined *pi*); C. pulchella (*st, fol* bronze, edged *r*); C. Rex (*st, fol* bronzy *g*, flushed *pi-p*, streaked *r-pi*); C. splendens (*st, fol* bronzy *g*; when young marked *pi*); C. terminalis (*st, fol* dark *g* and *r*); C. triumphans (*st, fol bk-p, gl* beneath; when young marked *pi*); C. Weismanni (*st, fol* when young *br-r*, tinged *c-w*, changing to bronze, margined *r*); C. Youngi (*st, fol* streaked *r* and tinged *pi*, changing to bronze); Correa cardinalis (*c-h, fl r* and *g*; 3); C. Harrisii (*c-h, fl r*); C. pulchella (*c-h, fl pi*; 6); Cossignia pinnata (*st, fl w*; *fol* veined *o-y* beneath; 10-20); Cowania mexicana (*c-h, fl y*; 1-6); C. plicata (*c-h, fl r*; 1-2); Crassula arborescens (*c-h, fl pi*; *fol gl*; 2-3); C. coccinea (*c-h, fl r*; 1-3); C. ericoides (*c-h, fl w*; ½); C. falcata (*c-h, fl r*, rarely *w*; 3-8); C. lactea (*c-h, fl w*; jasminea (*c-h, fl w*, becoming *r*); C. versicolor (*c-h, fl r* and *w, sc*); Crossandra guineensis (*st, fl l*; *fol* nerved *y* above, *r* beneath); Crotalaria cajanifolia (*c-h, fl y*; 4-6); C. Cunninghamii (*c-h, fl y-g*, marked *p*; whole plant *gl*; 3); Crowea angustifolia (*c-h, fl r*; 1-3); C. saligna (*c-h, fl pi*; 1-2); Curatella americana (*st, fl w*; 10); Cyanophyllum magnificum (*st, fol* above velvety *g*, veined *w*, beneath *r-p*); Daphne odora (*c-h, fl p, sc*; 3) and var.; Darwinia fimbriata (*c-h, fl pi*; 1-2); C. macrostegia (*c-h, fl w, y*, and *r*; 2-3); Datura arborea (*c-h, fl w*; 7-10); D. meteloides (*c-h, fl b-v* or *w*); D. suaveolens (*c-h, fl w, sc*; 10-15); Dianthus arbusculus (*c-h, fl p-r*; 1½); Dillwynia ericifolia (*c-h, fl y*); D. hispida (*c-h, fl r*); Diosma ericoides (*c-h, fl w*, tinged *r*; 1-3); Dipladenia amabilis (*st, fl pi-r*; 10); D. amœna (*st, fl pi*); D. boliviensis (*st, fl w*); D. Brearleyana (*st, fl pi*, changing to *r*); D. diadema (*st, fl pi*); D. hybrida (*st, fl r*); D. insignis (*st, fl pi-p*); D. nobilis (*st, fl pi-p*, changing to *o-r*); D. Regina (*st, fl pi*, changing to *pi-w*); D. splendens profusa (*st, fl r*); Dombeya Burgessiæ (*st, fl w*, marked *pi*; 10); D. Mastersii (*st, fl w, sc*); Dracæna concinna (*st, fol* margined *p-r*; 6); D. Goldieana (*st, fl w*; *fol* banded dark *g* and *si-gy*); D. Lindeni (*st, fol* banded *c-w* and *y*); D. phrynioides (*st, fol* spotted *y*); D. surculosa maculata (*st, fl y*; *fol* spotted *y*); Dracophyllum capitatum (*c-h, fl w*; *fol* tipped *r*; 1-1½); D. gracile (*c-h, fl w, sc*); Dryandra armata (*c-h, fl y*; 2-4); D. nivea (*c-h, fol w* beneath; 2-3); D. pteridifolia (*c-h, fl y*; 1½); Duranta Plumieri (*st, fl b*; 6-15); Echium fastuosum (*c-h, fl b*; 2-4); Elæocarpus grandiflora (*st, fl r, w*, and *y*; 7); Elæodendron capense (*c-h, fr y*; 18); Enkianthus quinqueflorus (*c-h, fl r* and *pi*; 3-10); Epacris impressa (*c-h, fl* varying from *w* to *r*; 2-3); E. longiflora (*c-h, fl r* and *w*; 2-4); E. pulchella (*c-h, fl r* or *pi*; 1-3); E. purpurascens (*c-h, fl w*, tinged *r*; 2-3); Ephedra nebrodensis (*c-h, fl w*; 3-4); E. vulgaris (*c-h, fl w*; 1-2); Eranthemum albo-marginatum (*st, fol* margined *w*, suffused *g*); E. aspersum (*st, fl w*, spotted *p*); E. atropurpureum (*st, fol* and stems dark *p*); E. cinnabarinum (*st, fl r-pi*); E. pulchellum (*st, fl b*; 2); E. reticulatum (*st, fol* netted *y*); E. tuberculatum (*st, fl w*); Erica Aitonia (*c-h, fl r* or nearly *w*; 2); E. ampullacea (*c-h, fl r*; 2); E. andromedæflora (*c-h, fl r* or *r-p*; 1-3); E. aristata Barnesii (*c-h, fl r* and *w*); E. Austiniana (*c-h, fl w*, marked *r*); E. Beaumontiana (*c-h, fl w*, tinged *p*; 1); E. Bergiana (*c-h, fl p*; 1½); E. Bowieana (*c-h, fl w*; *fol gl*; 1); E. caffra (*c-h, fl w, sc*; 1½); E. Candolleana (*c-h, fl r-pi* and *w*); E. Cavendishiana (*c-h, fl y*; 1½); E. cerinthoides (*c-h, fl r*; 3); E. Chamissonis (*c-h, fl pi*; 1½); E. colorans (*c-h, fl* varying from *r* to *w*; 2); E. echiiflora (*c-h, fl r*; 1½); E. elegans (*c-h, fl pi* and *g*; *fol gl*; ½-1); E. eximia (*c-h, fl r* and *g*; 2); E. Fairieana (*c-h, fl pi* and *w*); E. gracilis (*c-h, fl p-r*; 1); E. g. vernalis (*c-h, fl p-r*; 2-3); E. grandiflora (*c-h, fl y*; 3); E. hybrida (*c-h, fl r*); E. hyemalis (*c-h, fl pi* and *w*; 2); E. Irbyana (*c-h, fl w*, tinged *r*; 1-2); E. jasminiflora (*c-h, fl r*; 1-2); E. Lambertiana (*c-h, fl w*; 1-2); E. Linnæana (*c-h, fl w* and *r*; 1½); E. Marnockiana (*c-h, fl p*); E. Massonii (*c-h, fl r* and *g-y*; 3); E. McNabiana (*c-h, fl pi-r* and *w*); E. melanthera (*c-h, fl* tinged *pi*; anthers *bk*; 2); E. odorata (*c-h, fl w, sc*; 1); E. Parmentieriana (*c-h, fl r-p*; 1); E. perspicua nana (*c-h, fl w* and *pi-w*); E. physodes (*c-h, fl w*; 1-2); E. primuloides (*c-h, fl pi-p*; 1); E. propendens (*c-h, fl p* or *r*; 1); E. ramentacea (*c-h, fl p-r*; 1½); E. rubro-calyx (*c-h, fl w* and *r-p*); E. Savileana (*c-h, fl r* or *p-r*; 1); E. Shannoniana (*c-h, fl w*, tinged *p*; 1-2); E. tricolor (*c-h, fl r, w*, and *g-y*; 2) and vars.; E. ventricosa coccinea minor (*c-h, fl w* and *r*); E. v. grandiflora (*c-h, fl pi-p*); E. v. tricolor (*c-h, fl pi, r*, and *w*); E. vestita (*c-h, fl w*; 3) and vars.; E. Victoria (*c-h, fl p* and *w*); E. Westphalingia (*c-h, fl pi-r*); E. Wilmoreana (*c-h, fl pi*); Eriostemon buxifolius (*c-h, fl pi*; 1-2); E. intermedius (*c-h, fl w*, suffused *pi*; 3); E. myoporoides (*c-h, fl pi*; 1-2); E. neriifolius (*c-h, fl pi*; 3); E. scaber (*c-h, fl w*, tinged *pi*; 1½); Eupatorium atrorubens (*c-h, fl r*, shaded *l*); E. ianthinum (*c-h, fl p*; 3); E. riparium (*c-h, fl w*); E. Weinmannianum (*c-h, fl w, sc*); Eutaxia myrtifolia (*c-h, fl y*; 2-6); Fagræa auriculata (*st, fl y*); Faramea odoratissima (*st, fl w, sc*; 6); Ficus Brassii (*st*); F. Chauvieri (*c-h*); F. Cooperi (*st*); F. dealbata (*c-h, fol w* beneath); F. diversifolia (*c-h, fol* dotted *br* above); F. eburnea (*c-h, fol* veined *w*); F. elastica (*c-h, fol y-g* beneath); F. exsculpta (*st*); F. macrophylla (*c-h*), F. Parcelli (*st, fol* blotched *w*); Fittonia

Evergreen (Tender)—*continued.*

gigantea * (*st, fl r*; *fol* veined *r*; 1½); F. Verschaffeltii * (*st, fol* veined *r*); F. V. argyroneura (*st, fol* veined *w*); F. V. Pearcei (*st, fol* veined *r, gl* beneath); Fouquiera formosa (*st, fl r*; 6-10); Fuchsia apetala (*c-h, fl r* and *y*; 1-2); F. fulgens (*c-h, fl r*; 4-6); F. macrostema (*c-h, fl r*; 6-12) and vars; F. microphylla (*c-h, fl r*; 2); F. penduliflora (*st, fl r*); F. thymifolia (*c-h, fl r*; 4-6); F. triphylla (*st, fl r*; *fol p* beneath; 1-2); Galphimia glauca (*st, fl y*; 8); Gardenia florida (*st, fl w, sc*; 2-6); G. f. Fortunei (*st, fl w, sc*); G. nitida (*st, fl w*; 3); G. radicans major (*st, fl w, sc*); G. Thunbergia (*c-h, fl w, sc*; 4-5); Gastrolobium bilobum (*c-h, fl y*; 2); G. calycinum (*c-h, fl y*; 2); Gaultheria antipoda (*c-h, fl w* or *pi*; 6); G. ferruginea (*c-h, fl pi*); G. fragrantissima (*c-h, fl w* or *pi*); Gazania uniflora * (*c-h, fl y*; 1); Geissomeria coccinea (*st, fl r*; 3); Gnidia pinifolia (*c-h, fl c-w, sc*; 1); Godoya splendida (*st, fl w, sc*; 10); Goethea Makoyana (*st*, bracts *r*; 2); G. multiflora (*st*, bracts *pi* or *r*); Gomphia olivæformis (*st, fl y*; 10-15); Gomphocarpus fruticosus (*c-h, fl w*; 5-7); Gompholobium grandiflorum (*c-h, fl y*; 2); G. Knightianum (*c-h, fl pi* or *p*; 1); G. polymorphum (*c-h, fl r, y*, and *p*; 2); G. venustum (*c-h, fl p*; 1-3); Goodia lotifolia (*c-h, fl y* and *r*; 2-4); G. pubescens (*c-h, fl y*, spotted *r*; 1-3); Graptophyllum hortense (*st, fl r*; 2); Grevillea acanthifolia (*c-h, fl r*; 4); G. alpina (*c-h, fl r* and *y*; 4); G. Banksii (*c-h, fl r*; *fol w*; 15); G. fasciculata (*c-h, fl r* and *y*; 3-4); G. lavandulacea (*c-h, fl pi*; 5); G. macrostylis (*c-h, fl r* and *y*; *fol si* beneath; 1-2); G. punicea (*c-h, fl r*; *fol si* or *r-br* beneath; 4); G. rosmarinifolia (*c-h, fl r*; 4); G. sericea (*c-h, fl pi*; 6); G. Thelemanniana (*c-h, fl r* and *y*; 3-5); Grewia occidentalis (*c-h, fl p*; 10); Guettarda odorata (*st, fl r, sc* at night; 6-10); Gustavia insignis (*st, fl c-w*, tinged *pi*; filaments *pi*; anthers *o*; 3-4); G. pterocarpa (*st, fl w*; 6); Hakea cucullata (*c-h*; *fl r*); H. dactyloides (*c-h, fl w*; 7); H. nitida (*c-h, fl w*; 6-8); H. suaveolens (*c-h, fl w*; 4); Heinsia jasminiflora (*st, fl w*; 5-8); Heliotropium corymbosum (*c-h, fl l*; 4); Hermannia flammea (*c-h, fl o* or *r*; 1-3); Hibbertia perfoliata (*c-h, fl y*; 2); H. stricta (*c-h, fl y*); Hibiscus marmoratus (*c-h, fl w*, mottled *pi*); H. rosa-sinensis (*st*; 10-15) and vars.; H. schizopetalus (*st, fl o-r*); Hoffmannia discolor (*st, fol* velvety *g* above, *r-p* below; 6); H. Ghiesbreghtii * (*c-h, fol* velvety above, *r-p* below; 2-4); H. refulgens (*c-h, fl r*; *fol g* suffused *r* above, *r* below; 1-2); Homalomena Roezlii (*st, fol* blotched *y*; 6); H. Wallisii (*st, fol* edged *w*, blotched *y* above); Hovea elliptica (*c-h, fl b*; 2-4); H. pungens (*c-h, fl b*; 1-2); Hypericum balearicum (*c-h, fl y*; 1-2); Hypocalyptus obcordatus (*c-h, fl p*; 1-2); Indigofera australis (*c-h, fl pi*; 3-4); I. decora (*c-h, fl r*, 3); I. tinctoria (*st, fl r*; 4-6); Iochroma fuchsioides (*c-h, fl o-r*; 5); I. lanceolata (*c-h, fl p-b*; 4-5); Ixora chelsoni (*st, fl o-pi*); I. coccinea (*st, fl r*; 3-4); I. Colei (*st, fl w*); I. concinna (*st, fl pi*); I. congesta (*st, o*; 4); I. decora (*st, y* and *pi-r*); I. Fraseri (*st, fl r* and *pi*); I. fulgens (*st, fl o-r*; 3-4); I. javanica (*st, fl o*; 3-4); I. macrothyrsa (*st, fl r*); I. Pilgrimii (*i-h, fl o-r*); I. princeps (*st, fl br-w*, changing to *r-o*); I. regina (*st, fl v-pi*); I. splendens (*st, fl br-r*); I. Williamsi (*st, fl r-pi*); Jacobinia Ghiesbreghtiana (*st, fl r*; 1-1½); Jasminum grandiflorum (*i-h, fl w*); Jatropha podagrica (*st, fl o-r*; 1½); Lachnea buxifolia (*c-h, fl p*; 2) and var.; L. purpurea (*c-h, fl p*; 2); Lagerströmia indica (*st, fl pi*; 6-10); Lambertia formosa (*c-h, fl r*); Leea amabilis (*st, fol*, upper surface bronzy *g*, striped *w*; lower surface *r*, striped *g*); Leonotis Leonurus (*c-h, fl r*; 3-6); Leschenaultia biloba (*c-h, fl b*; 1); L. formosa (*c-h, fl r*; 1); Leucopogon australis (*c-h, fl w*; 2-4); L. Richei (*c-h, fl w*; 3-4); L. verticillatus (*c-h, fl w* or *pi*; *fol pi* when young; 3-6); Libonia floribunda (*i-h, fl r*, tipped *y*); L. Penrhosiensis (*i-h, fl r*); Lightfootia ciliata (*c-h, fl b*; ¾); Lindenia rivalis (*st, fl w* and *r*; 3); Liparia parva angustifolia (*c-h, fl y*); Lisianthus princeps (*c-h, fl. r, y*, and *g*); L. pulcher (*c-h, fl r*; 5); Lomatia ferruginea (*c-h*; 10); L. silaifolia (*c-h, fl w*; 2); Luculia gratissima (*c-h, fl pi, sc*; 9-16); L. Pinceana (*c-h, fl w, sc*); Macleania pulchra (*c-h, fl y* and *r*; *fol* tinged *r* when young); M. speciosissima (*c-h, fl r* and *y*; *fol* tinged *r* when young); Magnolia fuscata (*c-h, fl p, sc*; 2-4); Mahernia incisa (*c-h, fl r*, turning *o*, then *y*; 2-4); Mascarenhasia Curnoviana (*st, fl r*); Medinilla amabilis (*st, fl pi*); M. Curtisii (*st, fl w*; stamens *p*); M. magnifica (*st, fl pi*; 3); Melianthus major (*c-h, fl br*); Meriania rosea (*st, fl* varying from *w* and *r* to *pi* and *p*; 30); Miconia flammea (*st, fol*); M. Hookeriana (*st, fol* olive-*g*, marked *si*); Microcachrys tetragona (*c-h*, cones *r*); Mimulus glutinosus (*c-h, fl br* or *pi*; 5); M. g. puniceus (*c-h, fl* varying from *o-r* to *r*); Mitriostigma axillare (*st, fl w, sc*; 5); Monochætum alpestre (*c-h, fl r*); M. Hartwegianum (*c-h, fl pi*); M. Humboldtianum (*c-h, fl r-p*); M. sericeum multiflorum (*c-h, fl mv*); Monsonia speciosa * (*c-h, fl pi, p*, and *g*; ½); Montanoa bipinnatifida (*c-h, fl y*, 6-8); Morinda jasminoides (*st, fl br*; 6); Muraltia Heisteria (*c-h, fl p*; 2-3); Mussænda luteola (*c-h, fl y*; 5-6); Myrtus bullata (*c-h, fl pi*; 10-15); M. Luma (*c-h, fl w*; 3); M. Ugni (*c-h, fl w*; 4); Nepenthes atrosanguinea (*st*, pitchers *r*, spotted *y*); N. bicalcarata (*st*, pitchers *br*-downy when young); N. coccinea (*st*, pitchers *r, y, g*, and *bk*); N. Courtii (*st*, pitchers *gy-g*, spotted *r*); N. Dormanniana (*st*, pitchers *g*, blotched *r*); N. Hookeriana (*st*, pitchers spotted *r*); N. intermedia (*st*, pitchers *g*, spotted *r*); N. Kennedyana (*st*, pitchers *r* and *gl-v*); N. Khasiana (*st, fl g, y*; pitchers *g*, marked *p*); N. Lawrenciana (*st*, pitchers *g*, spotted *r*); N. madagascariensis (*st*, pitchers *r* and *c*); N. Mastersiana (*st*, pitchers *r, pi-c*, and *p*); N. Morganiæ (*st*, pitchers *r* and *g*); N. Northiana (*st*, pitchers spotted *p* and *bk*); N. Rafflesiana (*st, fl* and pitchers *y* and *br*); N. Rajah (*st*, pitchers *p*); N. Ratcliffiana (*st*, pitchers *g*, spotted *r*); N. rubro-maculata (*st*, pitchers *y-g*, spotted *r*); N. sanguinea (*st*, pitchers *r*); N. Sedeni (*st*, pitchers *g*, marked *br-r*); N. Veitchii (*st*, pitchers); N. Williamsii (*st*, pitchers spotted *r*); Nerium Oleander (*c-h, fl r*; 6-14); Nicotiana glauca (*c-h, fl y*; 10-20); N. wigandioides (*c-h, fl y-w*); Notospartium Carmichæliæ (*c-h, fl pi*; 20); Osbeckia glauca (*st, fl r* or *p*; 2); O. rostrata (*st, fl pi*); Oxyanthus tubiflorus (*st, fl w*; 3-4); Oxylobium Callistachys (*c-h, fl y*; 3-4); O. cuneatum obovatum (*c-h, fl y*, or *y* and *p*; 2); O. ellipticum (*c-h, fl y*; 2-3); O. obtusifolium (*c-h, fl r, o*, and *y*; 1-3); O. trilobatum (*c-h, fl y*; 2); Ozothamnus rosmarinifolius (*c-h, fl w*; 8-9); Panax diffusum (*st*; 2); P. dumosum (*st*; ½-1½); P. laciniatum (*st, fol* marked *br*); P. plumatum (*st*); P. Victoriæ (*st, fol* edged *w*); Pentapterygium flavum (*c-h, fl y*, margined *r*; 1-3); P. rugosum (*c-h, fl w*, marked *p* or *r*; 1-3); Pentas carnea * (*st, fl w-pi*; 1½); P. c. kermesina (*st, fl r-pi*, tinged *v*); Persoonia ferruginea (*c-h, fl y*; 3); P. longifolia (*c-h, fl y*; 10-20); P. rigida (*c-h, fl y*; 3-4); Petræa arborea (*st, fl b* and *v*; 12); Petrophila aicularis (*c-h, fl w, r*; 2); Phænocoma prolifera (*c-h, fl r*; 4); Philesia buxifolia (*c-h, fl r*; 4); Phlogacanthus asperulus (*st, fl p-r*; 3); P. curviflorus (*st, fl y*; 3-6); Phygelius capensis (*c-h, fl r*; 3); Phylica plumosa squarrosa (*c-h, fl w*; 2); Phyllanthus Chantrieri (*st, fl r, y*-hairy); P. pallidifolius (*st, fl r* and *y*); Phyllostachys nigra (*c-h*; 4-25); Pimelea ferruginea (*c-h, fl pi* or *r*; 1-2); P. hispida (*c-h, fl w-pi*; 2-4); P. rosea (*c-h, fl pi* or *w*; 2); P. spectabilis (*c-h, fl w*, tinged *pi*; 3-4); P. suaveolens (*c-h, fl y*; 1-3); Piper excelsum aureum-pictum (*c-h, fol* blotched *c*); Pittosporum viridiflorum (*c-h, fl g-y, sc*; 6); Platylobium formosum (*c-h, fl y*; 4); P. triangulare (*c-h, fl y*; 1); Pleroma Benthamianum (*st, fl p*; 4); P. elegans (*st, fl b*; 5); P. sarmentosum * (*c-h, fl v* or *v-p*; 1-2); Podalyria calyptrata (*c-h, fl p*; 6); Polygala myrtifolia grandiflora (*c-h, fl p*; 4-6); P. oppositifolia (*c-h, fl p* and *y-g*); Pomaderris apetala (*c-h, fl g*; 3-6); Portlandia platantha (*st, fl w*, tinged *r, sc*; 10-14); Posoqueria fragrantissima (*st, fl w, sc*); P. multiflora (*st, fl w, sc*); Prostanthera nivea (*c-h, fl w* or tinged *b*; 3-6); P. violacea (*c-h, fl b-p*; 4); Protea formosa (*c-h, fl v* and *pi*; *fol* margined *pi*; 6); P. mellifera (*c-h, fl pi* or *w*; 6); P. pulchella (*c-h, fl r*; *fol* margined *bk*; 3); P. Scolymus (*c-h, fl p*; 3); Psammisia Hookeriana (*st, fl pi-r*; 1½-2);

Evergreen (Tender)—*continued.*

P. Jessicæ (*st, fl r*); Psidium Cattleyanum (*st, fl w*; 10-20); Psoralea aculeata (*c-h, fl b* and *w*; 2-3); P. pinnata (*c-h, fl b*; 3-6); P. jasminiflora (*st, fl w*; *fol w*-tomentose beneath); Pultenæa obcordata (*c-h, fl y*; 2); P. rosea (*c-h, fl pi*; 2); P. stricta (*c-h, fl y*; 1-3); P. villosa (*c-h, fl y*; 1-3); Rafnia triflora (*c-h, fl y*; 2-4); Regelia ciliata (*c-h, fl r*; 3-5); Reinwardtia trigynum (*i-h, fl y*; 2-3); Rhododendron Aucklandii (*c-h, fl w* and *y*, tinged *pi*; 4-8); R. blandfordiæflorum (*c-h, fl r*, or *g* becoming *o-r* or *r*; 8); R. Brookeanum gracilis (*st, fl y*); R. calophyllum (*c-h, fl w*, tinged *y-g*; *fol*, under side *gl*, becoming ferruginous; 3); R. campylocarpum (*c-h, fl g-y, sc*; 6); R. Edgeworthii (*c-h, fl w*, often tinged *w-pi* or *y, sc*; 2); R. formosum (*c-h, fl w*, tinged *p* and *y*; 3-8); R. Hookeri (*c-h, fl r*; 12-14); R. jasminiflorum (*c-h, fl w*, tinged *pi*; anthers *r*; 2); R. javanicum (*c-h, fl o*, spotted *r*; *fol br*-scaly dotted beneath; 4); R. Nuttallii (*c-h, fl w, sc*; 12-30); R. Thomsoni (*c-h, fl r*; 6-10); Rhodomyrtus tomentosa (*c-h, fl pi*; 5; Rhus succedanea (*c-h, fl g-y*; *fol gl* beneath; 10-15); Rivina humilis (*st, fl w-pi*; *fr r*; 1-2); R. lævis (*st, fl w-pi*; *fr r*; 7-8); Roezlia granadensis (*st, fl r-p*; 3); Rondeletia amœna (*st, fl pi*; 4); R. cordata (*st, fl pi*; 4); R. gratissima (*i-h, fl pi, sc*); R. odorata (*st, fl r, sc*; 3); R. Purdiei (*st, fl y, sc*; 4); Ruellia Baikiei * (*st, fl r*; 3); R. Herbstii (*st, fl pi-p* and *w*; *fol*, upper leaves *p* beneath; 3); R. macrophylla * (*st, fl r*; 3-4); R. speciosa (*st, fl r*; 20); Russelia juncea (*st, fl r*; 3-4); R. sarmentosa (*st, fl r*; 4); Salvia albo-cærulea * (*c-h, fl w* and *b*; 3); S. chamædryoides (*c-h, fl b*; 1); S. confertiflora * (*c-h, fl r* and *y*; 3); S. fulgens (*c-h, fl r*; 2-3); Sanchezia nobilis * (*st, fl y*; bracts *r*; 1-3); S. n. glaucophylla (*st, fol gl-g*, striped *w* or *y*); Scævola Kœnigii (*c-h, fl r*; 2); Scutellaria Hartwegi (*st, fl r* and *v*; 1-2); S. Mociniana (*st, fl r* and *y*; 1½); Selago Gillii * (*c-h, fl pi*; 6); Sempervivum aureum * (*c-h, fl y*; *fol gl*; 1); S. canariense (*c-h, fl w*; 1½); S. tabulæforme (*c-h, fl g-y*; 1); Senecio argenteus * (*c-h, fl y*; 1-2); S. chordifolia * (*c-h, fl y*; 1); Sida inæqualis (*st, fl w*; 7); Siphocampylos coccineus * (*st, fl r*; 3); S. manettiæflorus * (*st, fl r* and *y*; 1); Solanum acanthodes (*st, fl b-p*; 3-6); S. atropurpureum * (*c-h, fl* tinged *p* and *y*); S. Capsicastrum* (*c-h, fr r*; 1-2); S. Pseudo-capsicum (*c-h, fr r*, sometimes *y*; 4); S. pyracanthum * (*c-h, fl b-v*; 3-6); Sophora secundiflora (*c-h, fl v*; 6); Sphæralcea elegans* (*c-h, fl* veined *p*; 3); S. miniata * (*c-h, fl r*; 1); Spiranthera odoratissima (*st, fl w, sc*; 6); Sprengelia incarnata (*c-h, fl p*; 2); S. Ponceletia (*c-h, fl r*; 1); Stachytarpheta mutabilis* (*st, fl r*, at length *pi*; 3); Statice arborescens (*c-h, fl b*; 2); Stenanthera pinifolia (*c-h, fl r, y*, and *g*; 2-3); Steriphoma cleomoides (*st, fl y*; 6); Streptosolen Jamesonii (*c-h, fl o*; 4); Strobilanthes anisophyllus * (*st, fl b-p*; 2-3); S. glomeratus * (*st, fl p*; 2-6); S. isophyllus * (*st, fl b-p*, 1-2); S. Wallichii * (*st, fl b*; ½-2); Styphelia tubiflora (*c-h, fl r*; 5); Tabernæmontana Barteri (*st, fl w*; 6); T. coronaria (*st, fl w, sc* at night; 4); Tetratheca hirsuta (*c-h, fl pi*; ½-1½); T. pilosa (*c-h, fl p*; 1-1½); Teucrium fruticans (*c-h, fl b*; 2-3); Thomasia macrocarpa (*c-h, fl r*; 3); Thyrsacanthus bracteolatus (*st, fl r*; 2); T. callistachyus (*st, fl r*; 2); T. rutilans (*st, fl r*; 2); T. Schomburgkianus (*st, fl r*; 3); Tinnea æthiopica (*st, fl r-p*; 4-6); Toxicophlæa spectabilis (*c-h, fl w, sc*; 4-6); Ursinia crithmifolia (*c-h, fl y*; 1-2); Vaccinium caracasanum (*c-h, fl r-w*; 4); V. erythrinum (*i-h, fl r*; *fol*, when young, stained *r*; 1½); V. leucobotrys, (*c-h, fl w*; *fr w*, spotted; 4-7); Vitex Lindeni (*st, fl l*, streaked *r*); Westringia rosmariniformis (*c-h, fl b*; *fol* hoary or *si-w* beneath; 2); Whitfieldia lateritia (*st, fl o-r* or *r*; 3); Zieria Smithii (*c-h, fl w*).

DECIDUOUS CLIMBERS. — Hardy. — Actinidia Kolomikta (*fl w*; *fol* turning *w* and *r*); A. volubilis (*fl w*); Ampelopsis quinquefolia (*fl g-p*; *fol* turning *r*; grown as a climber, but really a creeper); A. tricuspidata (*fol* turning *r* and *y*); Aristolochia Sipho (*fl y-br*); A. tomentosa (*fl p*); Atragene alpina (*fl b*, varying to *w*); A. americana (*fl p-b*); Berchemia volubilis (*fl g-w*); Celastrus scandens (*fl y*);

Deciduous Climbers (Hardy)—*continued.*

Clematis cærulea (*fl v*; stamens *p*) and vars.; C. Flammula (*fl w, sc*); C. florida (*fl w*); C. Fortunei (*fl w, sc*); C. graveolens (*fl y*); C. lanuginosa (*fl b*); C. paniculata (*fl w, sc*); C. virginiana (*fl w, sc*); C. Vitalba (*fl w, sc*); C. Viticella (*fl b, p*, or *pi*); Convolvulus Scammonia (*fl c*); Decumaria barbara (*fl w, sc*); Jasminum nudiflorum (*fl y*); Lonicera Caprifolium (*fl y* and *b, sc*); L. flava (*fl y, sc*); L. flexuosa (*fl y, sc*); L. Periclymenum (*fl r* outside); Periploca græca (*fl g* and *br*); Rosa moschata (*fl y-w*); R. multiflora (*fl w, pi*, or *p*); Tecoma radicans (*fl r*); Vitis æstivalis (*fl g, sc*; *fr bk*); V. Labrusca (*fl g, sc*; *fr p* or *y*); Wistaria chinensis (*fl b*); W. japonica (*fl w*).

Half-hardy.—Bomarea Caldasiana (*fl o-y* and *r*); B. Carderi (*fl pi* and *p-br*); B. oligantha (*fl r* and *y*); B. Shuttleworthii (*fl o-r, g, y*, and *r*); B. Williamsii (*fl pi*); Clematis montana (*fl w*); Rosa Banksiæ (*fl w, sc*); Rubus australis (*fl pi* or *w, sc*).

Tender.—Aloysia citriodora (*c-h, fl w* or *l*; *fol g, sc*); Aristolochia Goldieana (*st, fl g, y*, and *br*); Batatas bignonioides (*st, fl p*); B. Cavanillesii (*st, fl w-r*); B. paniculata (*st, fl p*); Gonolobus carolinensis (*c-h, fl p*); Lapageria rosea (*c-h, fl r-pi*); L. r. alba (*c-h, fl w*); L. r. superba (*c-h, fl r*); Solanum jasminoides (*c-h, fl b-w*); Tecoma grandiflora (*c-h, fl r*); Testudinaria elephantipes (*c-h, fl g-y*).

EVERGREEN CLIMBERS.—Hardy.—Clematis crispa (*fl l* or *p*); Hedera Helix algeriensis (*fol y-g*); H. H. aurantia (*fr r-o*; *fol gy-g*); H. H. chrysocarpa (*fol gy-g*); H. H. Donerailensis (*fol.* turning *p-br*); H. H. Rægneriana; H. H. rhombea (*fol* margined *c-w*); Jasminum officinale (*fl w, sc*); J. revolutum (*fl y, sc*); Passiflora cærulea (*fr y*); Rosa sempervirens (*fl w, sc*); Smilax aspera (*fl w* or *pi-w, sc*); S. rotundifolia (*fl g*).

Half-hardy.—Berberidopsis corallina (*fl r*); Bignonia capreolata (*fl o*); Clematis indivisa (*fl w* and *c*); Clianthus puniceus (*fl r*); Eccremocarpus longiflorus (*fl y* and *g*); E. scaber (*fl r* or *o-r*); Ficus stipulata; Mitraria coccinea (*fl r*); Pentstemon cordifolius * (*fl r*); Smilax aspera mauritanica (*fl g-y, sc*); Tecoma australis (*fl y-w*, tinged *p* or *r*); T. capensis (*fl o-r*).

Tender.—Abutilon Darwini (*i-h, fl o*); A. megapotamicum (*c-h, fl r, y*, and *br*); A. pulchellum (*c-h, fl w*); A. venosum (*c-h, fl o*, veined *r*); A. varieties (*c-h*); Adelobotrys Lindeni (*st, fl w*, turning *p*); Adenocalymna comosum (*st, fl y*); A. nitidum (*st, fl y*); Adhatoda cydoniæfolia (*st, fl w* and *p*); Æschynanthus Lobbianus (*st, fl r, sc*); Æ. pulcher (*st, fl r, sc*); Aganosma acuminata (*st, fl w, sc*); A. caryophyllata (*st, fl y*, tinged *r, sc*; A. elegans (*st, fl p*); A. marginata (*st, fl w, sc*); A. Roxburghii (*st, fl w, sc*); A. Wallichii (*st, fl w, sc*); Akebia quinata (*c-h, fl p-br, sc*); Allamanda Aubletii (*st, fl y*); A. cathartica (*st, fl y*); A. chelsoni (*st, fl y*); A. grandiflora (*st, fl y*); A. nobilis (*st, fl y*); A. Schottii (*st, fl y*); Amerimnon Brownei (*st, fl w, sc*); Amphilophium paniculatum (*st, fl pi*); Anemopægma racemosum (*st, fl y*); Antigonon amabile (*st, fl pi*); A. insigne (*st, fl pi*); Argyreia cymosa (*st, fl pi*); A. speciosa (*st, fl pi*); A. splendens (*st, fl r*); Aristolochia odoratissima (*st, fl p, sc*); Asparagus plumosus (*c-h, fl w*; *fol*); Astephanus triflorus (*c-h, fl w*); Asystasia scandens (*st, fl c*); Banisteria chrysophylla (*st, fl o*; *fol y*-downy beneath); B. ciliata (*st, fl o*); B. fulgens (*st, fl y*); B. splendens (*st, fl y*); Bauhinia corymbosa (*st, fl pi*); Beaumontia grandiflora (*st, fl w* and *g*); Begonia scandens (*st, fl w*; *fol* shining *g*); Besleria coccinea (*st, fl y*; bracts *r*); Bignonia æquinoxialis Chamberlaynii (*st, fl y*); B. Clematis (*st, fl w, y*, and *r*); B. floribunda (*st, fl p*); B. magnifica (*st, fl mv* and *y*, varying to *p-r* and *y*); B. pallida (*st, fl y* and *l*); B. variabilis (*st, fl g-y* and *w*); Billiardiera longiflora (*c-h, fl g-y*, changing to *p*); B. scandens (*c-h, fl c*, changing to *p*); Bougainvillea glabra (*st*, bracts *pi*); B. speciosa (*st*, bracts *l-pi*); Brachysema latifolium (*c-h, fl r*); B. undulatum (*c-h, fl br-v*); Cacoucia coccinea (*st, fl r*); Cestrum elegans (*c-h, fl p-r*) and var.; Cissampelos mauritiana (*st, fl y* and *g*;

Evergreen Climbers (Tender)—*continued.*

Clematis caripensis (*st, fl w, sc*); C. grandiflora (*st, fl g-y*); Clerodendron scandens (*st, fl w*); Clitoria heterophylla (*st, fl b*); C. ternatea (*st, fl b*, marked *w*); Cobæa penduliflora (*i-h, fl g*); C. scandens (*c-h, fl p*); Colquhounia coccinea (*c-h, fl r*); Combretum elegans (*st, fl y*); C. laxum (*st, fl r* or *y*); C. racemosum (*st, fl w*); Convolvulus pannifolius (*c-h, fl v-p* and *w*); Cryptostegia grandiflora (*st, fl r-p*); Dolichos lignosus (*c-h, fl pi* and *p*); Echites atropurpurea (*st, fl br*); E. franciscea sulphurea (*st, fl g-y, r,* and *pi*); E. stellaris (*st, fl pi* and *y*); Hibbertia dentata (*c-h, fl y*); Hoya australis (*st, fl w*, tinged *pi, sc*); H. carnosa (*st, fl pi-w*); H. cinnamomifolia (*st, fl y-g* and *p-r*); H. Cumingiana (*st, fl g-y*, or *w*, and *p-br*); H. globulosa (*st, fl c* and *pi*); H. imperialis (*st, fl r-br*); H. pallida (*st, fl y* and *pi, sc*); H. Pottsii (*st, fl y*, tinged *p, sc*); H. Shepherdi (*st, fl w* and *pi*); Ipomœa Bona-nox (*st, fl w*); I. Horsfalliæ (*st, fl pi*); I. Learii (*st, fl b*); I. rubro-cærulea (*st, fl w* and *r*, becoming *b*); Jasminum Sambac (*st, fl w, sc*); Lonicera sempervirens (*c-h, fl r* and *y*; *fol gl* beneath); Metrosideros scandens (*c-h, fl w*); Mikania scandens (*st, fl y-w*); Millettia megasperma (*c-h, fl p*); Oxypetalum cæruleum * (*st, fl b*); Passiflora alata (*st, fl r, p,* and *w, sc*); P. alba (*st, fl w*); P. amabilis (*st, fl r*); P. cæruleo-racemosa (*c-h, fl p*); P. cincinnata (*c-h, fl v-p* and *w*); P. cinnabarina (*st, fl r*); P. coccinea (*st, fl r* and *o*); P. edulis (*st, fl w, sc; fr p*); P. Hahnii (*c-h, fl w* and *y*); P. Innesii (*st, fl w, r,* and *v*); P. quadrangularis (*st, fl w, r,* and *v, sc*); P. racemosa (*st, fl r*; *fol gl* beneath); P. Raddiana (*st, fl r* and *p*; *fol* vinous beneath); Petræa volubilis (*st, fl p*); Philibertia gracilis * (*c-h, fl y*, striped *r*); Physianthus albens (Arauja sericofera) (*c-h, fl w, tinged r*); Physostelma Wallichii (*st, fl g, y*); Piper porphyrophyllum (*st, fol* above bronzy *g*, spotted *pi*; below *p*); Pleroma macranthum (*c-h, fl v-p*); Plumbago capensis (*st, fl b*); Pronaya elegans (*c-h, fl b* or *w*); Proustia pyrifolia (*c-h, fl w*); Quisqualis indica (*st, fl* varying from *o* to *r, sc*); Randia macrantha (*st, fl y*); Smilax ornata (*c-h, fol* spotted *si-gy*); Solandra grandiflora (*st, fl g-w*); Sollya heterophylla (*c-h, fl b*); S. parviflora (*c-h, fl b*); Stephanotis floribunda (*st, fl w, sc*); Stigmaphyllon ciliatum (*st, fl y*; *fol gl*); S. littorale (*st, fl y*); Tacsonia insignis (*i-h, fl v, r, g,* and *b*); T. manicata (*st, fl r*); T. mollissima (*c-h, fl pi*); T. Van-Volxemii (*i-h, fl r*); Tecoma filicifolium (*st, fol*); Trachelospermum jasminoides (*c-h, fl w, sc*; *fol* when young, *y-g*).

Evergreen Climbers (Tender)—*continued.*

DECIDUOUS TRAILERS.—Hardy.—Arctostaphylos alpina (*fl w* or *pi-w*); Pyxidanthera barbulata * (*fl w* or *pi*); Rubus fruticosus (*fl w* or *pi*; *fr bk* or *r-p*).

EVERGREEN TRAILERS.—Hardy.—Arctostaphylos Uva-ursi (*fl pi-w* and *r*); Astragalus monspessulanus * (*fl p*); Aubrietia deltoidea (*fl p*) and vars.; Cassiope hypnoides (*fl r* and *w*); C. virginica (*fl b*); Dryas Drummondi (*fl g-y*); D. octopetala (*fl w*, stamens *y*); Epigæa repens (*fl w*, tinged *r, sc*); Ercilla spicata (*fl p*); Frankenia lævis (*fl w-pi*); Fuchsia procumbens (*fl y* and *b*; *fr r*); Juniperus procumbens (*fol gl*); J. Sabina and var.; Linnæa borealis * (*fl pi-w*); Lithospermum prostratum (*fl b*, striped *r-v*); Oxycoccus macrocarpus (*fl pi*); O. palustris (*fl pi*); Rosa sinica (*fl w*); Vaccinium Vitis-Idæa (*fl pi*; *fr r*; *fol* dotted beneath).

Tender.—Begonia prismatocarpa (*st, fl o* and *y*; *fol* shining *g*); Bertolonia maculata (*st, fl v-p*); Blepharis procumbens (*c-h, fl b*); Calceolaria scabiosæfolia (*c-h, fl y*); Ficus barbata (*st*); Hoya bella (*st, fl w*, marked *r-pi*); H. linearis (*st, fl w*); Othonna crassifolia (*c-h, fl y*); Podanthes geminata (*st, fl o-y*, dotted *r*); Protea cordata (*c-h, fl p*); P. cynaroides glabrata (*c-h, fl w, g,* and *pi*); Sarmienta repens (*c-h, fl r*); Senecio mikanioides * (*c-h, fl y*); Solanum Seaforthianum (*st, fl r* or *l*); Tephrosia capensis (*c-h, fl p*).